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GREAT LAKES MANAGEMENT ACT OF 1985

HEARING

BEFORE THE

SUBCOMMITTEE ON
INTERGOVERNMENTAL RELATIONS

OF THE

COMMITTEE ON
GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

NINETY-NINTH CONGRESS

FIRST SESSION

ON

S. 765

TO PROVIDE FOR COORDINATED MANAGEMENT AND REHABILITATION OF THE GREAT LAKES AND FOR OTHER PURPOSES

MAY 22, 1985

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CONTENTS

Opening statements: Page
Senator Durenberger 1
Senator Glenn 3
Senator Levin 4

WITNESSES

May 22, 1985

Hon. Robert W. Kasten, Jr., U.S. Senator from the State of Wisconsin 4
Robert J. Sugarman, attorney, Washington, DC 8
Joseph O. Fletcher, Assistant Administrator, Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration, Department of Commerce; Henry L. Longest, Acting Assistant Administrator for Water, Environmental Protection Agency, accompanied by Peter Wise, Director, Great Lakes National Program Office, Region 5, and Tudor Davies, Director, Office of Marine Estuarine Protection 13
Thomas D. Martin, director, Office of Great Lakes, State of Michigan; Christian Ballantyne, midwestern representative of the Sierra Club; Donald McNaught, director, Minnesota Sea Grant Institute, and Robert A. Ragotzkie, director, Wisconsin Sea Grant Institute 29

Alphabetical List of Witnesses

Ballantyne, Christian:
  Testimony 29
  Prepared statement with attachments 52
  Responses to written questions 67
Davies, Tudor: Testimony 13
Fletcher, Joseph O:
  Testimony 13
  Prepared statement 20
Kasten, Hon. Robert W., Jr.:
  Testimony 4
  Prepared statement 6
Longest, Henry L.:
  Testimony 13
  Prepared statement 22
  Responses to written questions 23
Martin, Thomas D.:
  Testimony 29
  Prepared statement with attachments 40
  Responses to written questions 51
McNaught, Donald:
  Testimony 29
  Prepared statement 69
  Responses to written questions 73
Ragotzkie, Robert A.:
  Testimony 29
  Prepared statement 75
  Responses to written questions 84
Sugarman, Robert J.:
  Testimony 8
  Prepared statement 11
Wise, Peter: Testimony 13

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Text of S. 765 87

GREAT LAKES MANAGEMENT ACT OF 1985

WEDNESDAY, MAY 22, 1985

U.S. Senate,
Subcommittee on Intergovernmental Relations,
Committee on Governmental Affairs,
Washington, DC.

The subcommittee met at 2:03 p.m., in room SD–342, Dirksen Senate Office Building, Hon. Dave Durenberger (chairman of the subcommittee) presiding.

Present: Senator Durenberger.

Also present: Senator Kasten.

Staff present: Judy Erickson, professional staff member; and Jodi Mathison, chief clerk.

OPENING STATEMENT OF SENATOR DURENBERGER

Senator **Durenberger**. The committee will come to order.

I have several items of business to incorporate into my opening statement this afternoon. The first is to announce the formation of a Great Lakes task force within the Northeast-Midwest coalition. Senator John Glenn, who is a member of this committee, may be joining us later this afternoon. I will chair the Great Lakes task force for the coalition. The Northeast-Midwest coalition is a bipartisan Senate caucus which was formed to promote the economic interest of the Northeastern-Midwestern United States. The coalition is made up of issues ranging from transportation, energy, the environment infrastructure, and defense spending. There are a set of concerns that are unique to the States. That is, the States of Wisconsin, Minnesota, Ohio, Pennsylvania, New York, and Indiana, States that share the Great Lakes Basin.

We meet here today to consider Senator Bob Kasten's bill on water quality. My new cochairman, John Glenn, will soon be introducing new legislation concerning commercial transportation on the lakes. Senator Chuck Percy, during his years on this committee and in the Senate, championed legislation prohibiting the pollution of the Great Lakes Basin.

Finally, some of the discussion today will discuss the municipal construction programs, the role the public works program plays in the quality and quantity of Great Lakes water and all those waters play in the economy of the region. These are the kinds of issues that we expect the task force to address on a continuing basis. In fact, I am somewhat surprised that the Great Lakes caucus wasn't created a long time ago. This resource is the heartbeat of the economic artery of our region.

Now we have a formal Senate organization that will put the Great Lakes at the heart of these efforts.

We are here this afternoon to take testimony on Bob Kasten's bill, S. 765, to promote a coordinated management and protection strategy within the Federal Government for the Great Lakes.

As you know, Senator Moynihan and I offered portions of this bill as an amendment to the Clean Water Act before it was reported to the full Senate by the Environment and Public Works Committee. We expect Clean Water to be considered by the Senate shortly after we return from the Memorial Day recess, and it is just possible that this hearing will serve as a foundation for further amending the bill to add more credible and wider ranging management provisions in regard to the Great Lakes.

Finally, I want to note one other item in regard to the Clean Water Act amendments that were reported by the Environment Committee before we turn to our witness.

I will not be discouraging comments today on the construction grants allocation formula that was included in that bill. In fact, I hope that every witness will take this as a forum to characterize that formula in whatever way they might choose. I have called it political, I have called it pernicious; I have said it violated international agreements. If we had time, I would tell you the tale of the lamprey eel, of how it invaded the lakes and almost totally eliminated the lake trout population. Then, I would call the new construction grants program or the construction grants formula the moral equivalent of the lamprey eel.

You can be sure that I and other Senators like Bob Kasten from the Great Lakes States and together with Senators from the Chesapeake Bay States, for that matter, will be taking all the time that is necessary on the floor of the Senate to undo that formula, if we can.

So comments on everything from toxic contaminants to congressional mathematics are appropriate here this afternoon. I have read the testimony of our witnesses and can promise a thoroughly interesting and productive afternoon with the exception of about 20 minutes in the middle of our afternoon from about 2:55 to 3:15, when I must recess the hearing in order to start up an executive session for the Senate over in the Capitol on an intelligence matter.

Senators Glenn and Levin have statements which I would like to have inserted in the record following mine.

[The statements referred to follows:]

PREPARED STATEMENT OF SENATOR DURENBERGER

The topic of this afternoon's hearing is S. 765, the Great Lakes Management Act of 1985. S. 765 was introduced by Senator Kasten and I am pleased to be one of twelve cosponsors of this act.

The Great Lakes and its basin form one of the United States' most valuable resources. The lakes contain about 20 percent of the world's fresh surface water and over 95 percent of the surface water supply in the United States. The Great Lakes Basin is home for 20 percent of the total U.S. population and supports economic activity that accounts for 25 percent of the annual national income for the United States.

Throughout history, the Great Lakes have been viewed as a virtually inexhaustible supply of high-quality water. But like all great natural resources, the basin has a vulnerable and fragile ecosystem.

The lakes are an environmental sink. They have been collecting our wastes, agriculture run-off, industrial and municipal discharges containing harmful chemicals and toxic substances for over 200 years.

We have demanded a lot from the lakes, and the demand has taken its toll. The water quality of the lakes has declined sharply over the years, destroying fishery resources, limiting recreational use and threatening human health.

In 1972 and again in 1978, the United States and Canada signed a Great Lakes Water Quality Agreement. This agreement has gone a long way to heighten the awareness that a coordinated management approach is needed to protect and preserve the natural resources of the Great Lakes Basin. Through this agreement, the governments of Canada and the United States have held each other accountable for actions which affect the water quality of the Great Lakes as well as requiring that specific steps be taken to improve water quality.

In 1982 GAO reported that the United States was failing on a number of points in meeting their requirements under the agreements. Specifically the U.S. was behind in controlling municipal pollution sources, establishing and implementing adequate programs to control phosphorus land toxic chemicals.

GAO determined that a lack of intergovernmental coordination was a major impediment to meeting our responsibilities under the agreements. With more than a dozen U.S. federal agencies and eight states sharing management responsibilities, it is no wonder that coordination was a problem. We need a way out of the bureaucratic maze.

Finding a way out of this maze is the primary goal of S. 765. The comprehensive management and research requirements of this act will go a long way toward getting us back on track under the water quality agreements.

But the formula for the municipal construction grants program contained in the Clean Water Act Amendments of 1985 threatens to derail the train. It is the moral equivalent of the lamprey eel. Let me explain. When we built the St. Lawrence Seaway we made a major environmental blunder, which allowed sea lamprey into the Great Lakes system. Now the sea lamprey devours its prey by sucking out its body fluids. In this way, the sea lamprey nearly destroyed the entire lake trout population in all the lakes.

And the Environment Committee's formula sucks $175 million out of the Great Lakes. It guts the program, harmful and toxic chemicals will continue to flow unchecked into the lakes, the Clean Water Act's goals of fishable, swimmable water will not be met and one of the world's most valuable resources will go to pot. Not only will we have no lake trout, we will have no clean water.

We will hear from witnesses this afternoon who share the goal of restoring and enhancing the Great Lakes. We will be given an update on our performance under the Great Lakes Water Quality Agreements and an outlook for what remains to be done.

Our first witness is Senator Kasten, the author of The Great Lakes Management Act of 1985. Senator, it is a pleasure to have you here today and I commend you for your foresight and efforts in developing this legislation.

PREPARED STATEMENT OF SENATOR GLENN

I would like to thank you Mr. Chairman for allowing me to speak. It is a pleasure for me to join you today at this hearing and to join you as cochairman of the Senate Great Lakes Task Force. I look forward to working with you on projects which will both preserve the natural resources and revitalize the economy of the Great Lakes region.

Over the past several years, we, as Great Lakes Senators, have been very successful in working together on Great Lakes issues. The formation of this task force will allow us to focus more attention and greater resources to important Great Lakes issues, such as water quality and commercial shipping which benefit the Great Lakes region and, therefore, the United States as a whole.

Today we have the opportunity to examine Senator Kasten's legislation, S. 765, the Great Lakes Management Act. This legislation will allow the Environmental Protection Agency to build on the success of the decade and continue to improve the water quality of the Great Lakes. The coordinated management authority and additional funding are essential if we are to meet our commitments as spelled out in the Water Quality Agreement of 1978.

Unfortunately, recent action by the Senate Environment and Public Works Committee to change the waste water treatment grant formula has jeopardized our future successes. According to this new formula, the State of Ohio alone will lose over $27 million a year. The Great Lakes region stands to lose in excess of $158 million a year. These new formulas threaten to undo any progress which we could hope to achieve through Senator Kasten's legislation.

I would like to thank you, Senator Durenburger, for your constructive effort to battle these formula changes. I know that each Senator from the Great Lakes region shares that sentiment.

But let us get on with this hearing and our effort to improve the water quality of the lakes. I look forward to hearing from Senator Kasten and the other witnesses and I look forward to working with you, Senator Durenberger, on the many Great Lakes issues facing this Congress.

PREPARED STATEMENT OF SENATOR LEVIN

Mr. Chairman, I want to commend you for calling this hearing today to focus on the management and the future of the Great Lakes. I would also like to thank Tom Martin of the Great Lakes Office of Michigan for testifying and giving us the benefit of his expertise.

This issue and the bill introduced by Senator Kasten of which I am a cosponsor are important because the Great Lakes are an invaluable natural resource. They contain 95 percent of the surface fresh water in the United States and provide drinking water for 75 percent of the Great Lakes Basin's 35 million people. The Great Lakes are located in the industrial heartland of the nation—in fact, one-fifth of U.S. manufacturing is located along the Great Lakes shores.

The Great Lakes Management Act of 1985 which the Committee is examining today recognizes this importance of the Great Lakes and the necesssity of the federal government to coordinate its environmental management efforts under one agency—the Great Lakes National Program Office—within the Environmental Protection Agency. The Office, under this legislation, would develop a long-term plan for the Great Lakes. In addition, environmental protection of the Great Lakes would be greatly enhanced by implementation of a program to control nutrient runoff and a three year study and demonstration projects relating to the control and removal of toxic pollutants in the lakes.

The Kasten bill has been attached to the Clean Water Act by the Environmental and Public Works Committee. The hearings today should help to fortify the case for the Great Lakes bill when the subject comes to the Senate floor.

Senator **DURENBERGER**. Our first witness is Senator Bob Kasten, the author of the Great Lakes Management Act of 1985.

Bob, it is a pleasure to have you here today. I certainly commend you for your foresight and your efforts in developing this legislation.

TESTIMONY OF HON. ROBERT W. KASTEN, JR., U.S. SENATOR FROM THE STATE OF WISCONSIN

Senator **KASTEN**. Mr. Chairman, thank you very much for your kind comments. I am happy to have a chance to appear here today. I am going to read excerpts of my statement. I ask that the entire statement appear in the record as if read.

Senator **DURENBERGER**. Without objection, it will.

Senator **KASTEN**. It is difficult to speak about the Great Lakes without using superlatives. They are simply one of the most fantastic and vast resources that our Nation is blessed with. Despite their vastness, the lakes are in deep trouble. Unless we act now, we will lose valuable resources on which we all depend.

Twenty-seven million of us depend on the lakes as our source of drinking water. Millions more of us depend on them as essential components of commerce and industry in our Nation's heartland. Let me just cite one example of where mismanagement threatens the resource.

Today we know that human health is directly threatened by toxic contamination of the Great Lakes. We have seen direct links between the consumption of contaminated Great Lakes fish and human health, behavioral development, and physical problems of children whose mothers ate these fish have already been documented.

We have also seen more dramatic health problems in animal species who draw their food from the lakes. In one study, almost 10 percent of the birds born near Lake Michigan were deformed. Another U.S. Fish and Wildlife Service study found reproductive failures in 95 percent of lake trout in Lake Michigan, when a 50-percent success rate should occur.

All too often, we see the health problems that occur in animals show up in humans. Unless we take the necessary steps today, we can likely expect to see similar health problems currently facing many Great Lakes species to begin to show up in human beings.

Unfortunately, the Federal Government is largely to blame for the failure to establish adequate management programs for the Great Lakes. The only way to describe Federal efforts to make the Great Lakes is a textbook example of how to abuse a resource.

There is no single agency responsible for the comprehensive environmental management of the Great Lakes. Instead, there are over a dozen major Federal agencies with responsibilities for management of the lakes. These agencies are poorly coordinated and they are often working at cross purposes.

The result of this fragmented responsibility is a disgrace. One agency often doesn't know what the other agency is doing. We have duplication of effort, conflicting efforts, and great gaping holes in work that needs to be done to protect the Great Lakes.

What is needed is some kind of a coordinated effort to manage our Nation's most important water resource. To accomplish this objective, I have introduced S. 765, the Great Lakes Management Act. I am pleased, Mr. Chairman, that you and several other members of this committee have cosponsored this legislation.

Our bill will correct the most onerous problems of the current lakes' management by taking the following steps: First of all, recognize the Great Lakes National Program Office—EPA—as the lead agency for environmental management of the Great Lakes. Second, recognize NOAA as the lead agency for Great Lakes research. Third, to establish a mechanism for interagency coordination. Fourth, establish a basin-wide surveillance and monitoring program. Fifth, establish a Great Lakes research exchange. Sixth, establish a 5-year pilot program to demonstrate techniques for removing in-place toxics from lake bottoms. Seventh, establish a 5-year program to reduce nutrient loading in the Great Lakes. And last, require an annual state-of-the-lakes report.

These are fundamental management improvements. In fact, I am amazed that these steps have not already been taken. We can't expect to protect a resource until we begin to devote the priority in management skills and take the perspective to understand that resource.

Three years ago, Mr. Chairman, the General Accounting Office called for exactly these steps in this report, since then, Congress has continued to fail to recognize the importance of the Great Lakes. Every year we find ourselves struggling to hold on to the programs that are currently in place rather than moving ahead to take advantage of new knowledge.

Finally, Mr. Chairman, I would like to focus the committee's attention on the need to strengthen research efforts on the lakes.

Section 5 of our bill establishes the Great Lakes Research Office within NOAA.

Currently, there is no office that is responsible for developing a coordinated long-term research plan for the Great Lakes Basin. Likewise, there is no single depository for the product of current work. It is essential that these problems be corrected.

These loose ends simply must be gathered together. The alternative is to continue the current catch-as-catch-can approach of looking out for the needs of those programs, only the ones that we know the most about, the wheel that squeaks, or the people that cry wolf.

I hope that the subcommittee will be able to move forward quickly on this issue. I look forward to working with you, Mr. Chairman, and other members of the committee, as we work this critical legislation. I hope very much that the legislation will, in fact, be enacted.

Senator DURENBERGER. Bob, I think we have a problem. You may want to run over now and cast a vote before we get into our next witness.

Senator KASTEN. Fine.

Senator DURENBERGER. If I ask you questions, they would only be for some records, so I won't do that. Maybe we can save everyone's time. Are you going to be able to come back?

Senator KASTEN. Yes. I will go over and come back.

Senator DURENBERGER. Why don't we go over and vote? We will take about a 7-minute recess to accomplish that. We will come back and take Mr. Robert J. Sugarman next.

Senator KASTEN. Thank you, Mr. Chairman.

[A brief recess was taken.]

[Senator Kasten's prepared statement follows:]

PREPARED STATEMENT OF SENATOR KASTEN

Mr. Chairman, I am very pleased to appear today before the Subcommittee on Intergovernmental Relations to testify on the need for enhanced management of the Great Lakes.

It is difficult to speak about the Great Lakes without using superlatives. They are simply one of the most fantastic and vast resources that our Nation is blessed with. They reach for a thousand miles, and are more like an inland freshwater sea than inland lakes. But I will not repeat the statistics which I am sure the chairman is familiar to describe how significant the Great Lakes are. Instead, I will concentrate my testimony on what we need to do today to deal with critical problems facing this Nation's most important fresh water resource.

Despite their vastness, the Great Lakes are in deep trouble. Unless we act now we will loose valuable resources on which we all depend.

Twenty-seven million of us depend on the lakes as our source of drinking water. Millions more depend on them as essential components of commerce and industry in our Nation's heartland.

Let me cite just one example of where mismanagement threatens the resource.

Today we know that human health is directly threatened by the toxic contamination of the Great Lakes. We have seen direct links between the consumption of contaminated Great Lakes fish and human health. Behavioral development and physical problems of children whose mothers ate the fish have already been documented.

We have also seen even more dramatic health problems in animal species who draw their food from the lakes. In one study conducted by the Fish and Wildlife

Service, almost 10 percent of the birds born near Lake Michigan were deformed. Another Fish and Wildlife Service study found reproductive failures in 95 percent of lake trout in Lake Michigan when a 50 percent success rate should occur.

All too often, we see the health problems that occur in animals show up later in humans. Unless we take the necessary steps today we can likely expect to see similar health problems currently facing many Great Lakes species to show up in humans.

Unfortunately, the Federal Government is largely to blame for the failure to establish adequate management programs for the Great Lakes. The only way to describe Federal efforts to manage the Great Lakes is as a texbook example of how to abuse a resource.

There is no single agency with responsibility for the comprehensive environmental management of the Great Lakes. Instead, there are a dozen major Federal agencies with responsibilities for management of the Great Lakes. These agencies are poorly coordinated and often working at cross purposes.

In addition, the lakes are bordered by the States of Minnesota, Wisconsin, Michigan, Indiana, Illinois, Ohio, Pennsylvania, and New York. Each of these States has its own agencies with responsibilities for lakes management.

The problem is made even more complex by the fact that two nations border the Great Lakes. The Canadian Government and its Provinces also have programs to help manage the Great Lakes.

The result of this fragmented responsibility is a disgrace. One agency does not know what another is doing. The result is duplication of effort, conflicting efforts, and great gaping holes in work that needs to be done to protect the Great Lakes.

What is needed is a coordinated effort to manage our Nation's most important water resources. To accomplish this objective, I have introduced S. 765, "The Great Lakes Management Act of 1985." I am pleased that the chairman of this subcommittee and several members of the committee have cosponsored this legislation.

S. 765 will correct the most onerous problems with current lakes management by taking the following steps:

1. Recognize the Great Lakes National Program Office (EPA) as the lead agency for environmental management of the Great Lakes.
2. Recognize NOAA as the lead agency for Great Lakes research.
3. Establish a mechanism for interagency coordination.
4. Establish a basinwide surveillance and monitoring program.
5. Establish a Great Lakes research exchange.
6. Establish a 5-year pilot program to demonstrate techniques for removing inplace toxics from lake bottoms.
7. Establish a 5-year program to reduce nutrient loading in the Great Lakes.
8. Require an annual State of the Lakes Report.

These are fundamental management improvements. In fact, I am constantly amazed that these steps have not already been taken. We can not expect to protect a resource until we begin to devote the priority in management skills and take the perspective to understand that resource.

Three years ago the General Accounting Office called for the need to make most of these management changes. Since then, however, Congress has continued to fail to recognize the importance of the Great Lakes. Every year we find ourselves struggling to hold on to the programs that are currently in place rather than moving ahead to take advantage of new knowledge.

Finally, Mr. Chairman, I would like to focus the committee's attention on the need to strengthen research efforts on the Great Lakes.

Section 5 of S. 765 establishes the Great Lakes Research Office within the National Oceanic and Atmospheric Administration.

Currently there is no office that is responsible for developing a coordinated long-term research plan for the Great Lakes basin. Likewise, there is no single repository for the product of current work. It is essential that these problems be corrected.

These loose ends simply must be gathered together. Without a solid data base on the conditions of the lakes it will be impossible to accurately identify progress in efforts to clean up our lakes. Without this data we here in Congress will not be able to make the most informed decisions on where to devote limited financial resources. The alternative is to continue the current catch-as-catch-can approach of looking out for the needs of those programs that cry "wolf" the loudest.

I hope the subcommittee will be able to move quickly on this issue. I look forward to continuing to work with the members of this committee to have this critical legislation enacted.

Thank you Mr. Chairman.

Senator DURENBERGER. The hearing will come back to order.

Our next witness is Robert J. Sugarman.

Mr. Sugarman is an attorney. He served as the U.S. Chairman of the International Joint Commission from 1978 to 1981.

Mr. Sugarman, we welcome you.

TESTIMONY OF ROBERT J. SUGARMAN, ATTORNEY, WASHINGTON, DC

Mr. SUGARMAN. Thank you, Senator, and Mr. Chairman, I appreciate the honor of being invited here today. I, too, am going to read excerpts from my prepared statement.

As a former co-Chairman of the International Joint Commission of the United States and Canada, I had the opportunity to become familiar with the progress and problems of the United States and Canada in addressing the ongoing pollution problems in the Great Lakes.

During the 1970's, dramatic progress was made in reducing phosphorus inputs into the lakes, which were clearly identified as the primary source of eutrophication. This had led to substantial improvement in the Great Lakes ecosystem and for its useability for recreation and fishing.

However, it became recognized, during the 1970's, that the effort that was then made would not be sufficient, and the International Joint Commission, after several years of study, reported to the Governments of the United States and Canada that additional efforts in the order of 10,000 or more tons per year of phosphorus reduction would be required in order to relieve and eliminate the eutrophication problem in the lakes.

In 1981, therefore, the IJC recommended that substantial additional reductions be accomplished by such methods as alternative forms of sewage treatment such as land application, which achieve substantial better results, and by additional add-on treatment at conventional sewage treatment plants.

These programs will require substantial additional capitalization beyond that which has been dedicated so far to improvement of pollution conditions in the Great Lakes.

Second, at the same time, during the 1970's, the toxic problems emerged as a serious potential disaster for the lakes. Senator Kasten has already referred to the scope and delineation of the problem. I would only add that I concur completely with the judgment that we run the risk of losing the Great Lakes as a public resource if we do not address that problem.

Instead of adequately addressing that problem, we have allowed it to become worse by continuing the inputs of toxics into the lakes where, of course, they build up because the lakes have long retention periods. We are not adequately treating either industrial or municipal wastes to remove toxics.

I would like to bring to the committee's attention that these needs of the Great Lakes are not merely a matter of public policy and desirable objectives, but represent an international obligation on the part of the United States.

Pursuant to article 4 of the Boundary Waters Treaty of 1909, neither country may pollute the boundary waters to the injury of health or property in the other State. While difficulties abound in drawing cause and effect relationships between toxics and phosphorus inputs on the one hand and cross-boundary impacts on the other, it is clear that such effects have been and are and will continue to occur and, indeed, will become more serious and severe if not properly addressed.

While the treaty itself does not define appropriate levels of pollution, and indeed, implies that the only appropriate response is the elimination of the pollution, the two countries, by executive agreement, have designed a structure for coordinating programs to reduce pollution of the lakes. This executive agreement, the Great Lakes Water Quality Agreement of 1978, draws its legal standing from the Boundary Waters Treaty and domestically within the United States from the executive powers of the agency such as EPA to adopt regulations as necessary to implement their programs.

However, because of the proliferation of pollutants in the lakes and the inadequate treatment that has been afforded to them, the United States is simply failing to adhere to the simple mandate of the 1909 Boundary Water Treaty, and more specifically, is failing to meet its obligation under the 1978 Water Quality Agreement which implements that treaty.

This obligation includes the United States undertaking to monitor, to achieve phosphorus reduction, and to make toxics substantially absent from the lakes, all of which are requirements of the 1978 agreement.

The commentary on the allotment formula entitled "Proposed Allotment Formula" does not address the question of whether the funding for the Great Lakes is adequate to discharge the commitment of the United States under the Boundary Waters Treaty and the 1978 Water Quality Agreement.

Examination of achievements to date and examination of the results of surveillance and monitoring on the lakes make it clear that the level of funding simply will not achieve U.S. compliance with its international obligations.

It is my conclusion that it is necessary, in order to comply with the U.S. international obligations, to target funds to the Great Lakes Basin within the basin States, because several of the States have but a small minority of their population and a small portion of their territory within the basin.

I conclude further that it is necessary to consider toxic treatment requirements and phosphorus reductions in funding facilities and to require that the sewage treatment facilities require the maximum feasible phosphorus reduction and toxics reduction.

Finally, I conclude that an increase not a decrease, in funding is required to maintain adequate progress toward meeting our international commitment. I commend this committee for its energy and foresight in addressing the management and rehabilitation of the Great Lakes and Senator Kasten and his cosponsors in providing legislation that would move toward adequate coordinated management of the lakes.

I believe that the Great Lakes Management Act of 1985, if enacted, will be a substantial step forward in ensuring coordinated Federal attention to the Great Lakes area. Hopefully, in addition, it would help to ensure proper consideration of Great Lakes funding needs in the budget process.

I know from my experience that the people of the Great Lakes Basin, both in the United States and Canada, will derive extremely significant benefits from proper management of the Great Lakes.

In addition, the United States will be in a position of meeting its international obligations under the treaty and the 1978 Water Quality Agreement.

Mr. Chairman, that concludes may statement.

Senator DURENBERGER. Mr. Sugarman, could you tell us briefly what the role of the IJC is in relationship to the Water Quality Agreement that exists between the United States and Canada?

Mr. SUGARMAN. Under the 1979 Water Quality Agreement, the International Joint Commission is responsible for monitoring, evaluating, and reporting on the state of the lakes with respect to pollution and also the effectiveness of the programs of the jurisdictions, including the United States and Canada, in meeting the pollution problems of the lakes.

The Commission maintains a staff and collects data and evaluates that data regularly and reports to the Governments and public in trends and health of the lakes.

Senator DURENBERGER. Do you have an opinion as to how well Canada and how well the United States have been doing in implementing that 1978 agreement?

Mr. SUGARMAN. Neither country has been meeting its obligations with respect to toxic reduction. With respect to phosphorus and other so-called conventional pollutants, both countries have been making progress. I believe it is fair to say that the United States has been making some significant progress.

However, the United States was, by far, the greatest contributor to the problem, and therefore, still has the greatest distance to go.

Senator DURENBERGER. How about the issue of municipal waste water discharge?

Mr. SUGARMAN. The municipal waste water is a primary source of the pollution problems through the Great Lakes. It is by no means the only source.

Industrial pollution—we are referring to toxics, specifically—has been filtered in through the municipal treatment plants into the lakes. EPA has been focusing recently on its pretreatment programs in an effort to eliminate those toxic inputs to municipal plants. I question whether that can ever be accomplished in major part, and therefore, I believe it will continue to be necessary, as it certainly is now, for municipal treatment plants to properly deal with toxics.

Senator DURENBERGER. Is there a commitment by the United States, in your understanding, to assist the municipalities in the States that border the Great Lakes in implementing the U.S. obligation to reduce municipal waste water discharge?

Mr. SUGARMAN. My experience is that there has been very little by way of any Federal commitment, that is, funding that is specifically dedicated toward dealings with the lakes. By the word "specifically," what I mean is that while there is a general national program of assisting States and municipalities, which is, of course, the Construction Grants Program, and the EPA-State Administrative

Agreements, there has been little or no focus of those programs toward specific Great Lakes needs. The Great Lakes National Program Office in Chicago, an EPA agency, has functioned effectively in the area of attempting to collect data and provide coordination. But the effort to focus the attention of the program on the lakes in a substantive way must depend on congressional mandate to do so, and there is no such congressional mandate to do so.

Senator **Durenberger**. If the United States eliminates Federal funding for municipal waste water treatment, combined source overflow and a variety of other discharges, would it be your opinion that it would be difficult? Or what would your opinion be relative to the ability of the United States to meet its obligation under the 1978 Water Quality Agreement?

Mr. **Sugarman**. Clearly, the performances to date would suffer substantially and would become much less effective.

The obligation of the United States, under the treaty, is not to pollute the boundary waters to the injury of health or property. The obligation of the United States under the agreement, as an implementation of the treaty, is to engage in a whole series of programs to eliminate and reduce that pollution. Those commitments are very specific.

It is the obligation undertaken by the United States, not by any State, not by any municipality, and if the United States does not put resources into meeting that commitment, by definition, it will be defaulting in that commitment.

Senator **Durenberger**. Would you say in 1980, when this administration recommended ending all waste water treatment, that in effect, that was an implied violation of the agreement?

Mr. **Sugarman**. I would certainly say that it was. The violation of the treaty—I come back to the treaty, because it is the legal foundation for the agreement—the violation of the treaty is in allowing transboundary pollution to occur. The violation of the agreement is in not engaging in the programs that are necessary to eliminate the pollution that violates the treaty.

Senator **Durenberger**. Bob.

Senator **Kasten**. Mr. Chairman, thank you. I don't have any questions of this witness.

Senator **Durenberger**. Mr. Sugarman, thank you very much.

Mr. **Sugarman**. Thank you.

[Mr. Sugarman's prepared statement follows:]

Prepared Statement of Robert J. Sugarman

Mr. Chairman, I appreciate the honor to be invited here today.

As a former American Chairman of the International Joint Commission, United States and Canada, I have had the opportunity to observe the progress, and problems, of the United States and Canada in addressing the ongoing pollution problems in the Great Lakes.

In the 1970's, dramatic progress was made in reducing phosphorus inputs to the lake, which were clearly and properly identified as the primary source of eutrophication. This led to substantial improvement in the Great Lakes Ecosystem, and more dramatically, in its useability for recreation and fishing.

However, it was recognized throughout that decade that further reductions would be required in order to fully restore and maintain the Great Lakes as useable and economically beneficial resources. The International Joint Commission conducted a long-term binational study needed additional required phosphorus reductions, and in 1981, reported to the Governments that additional reductions in the order of

10,000 tons per year were required. A significant portion of these reductions must be realized through point source (treatment plant) improvements, and most of the reduction must be realized in the United States. Major sewage treatment plants in U.S. cities have been substantially improved, but secondary treatment will simply not achieve the necessary levels of phosphorus reduction.

Therefore, the Commission recommended, and further studies since 1981 confirm, that substantial improvement can be achieved by diverting sewage to land based treatment systems, as has been urged by Congress repeatedly in the Clean Water Act and amendments thereto. These systems remove phosphorus to the extent of one-tenth the level achieved by traditional treatment. Fortunately, state and local governments are increasingly perceiving the beneficial effects of land based treatment on cost and environmental quality, and the method is gaining increasing acceptance. However, substantial additional capitalization is required to convert primary and secondary treatment systems to this method.

Additionally, the largest cities still require additional add-on traditional treatment to comply with phosphorus requirements.

In the toxics area, the Great Lakes represent a disaster in the making. Urgent action is required to eliminate further inputs of toxics and to address the toxics already in the lakes. Because the lakes do not flow outward to the ocean, there is a buildup problem which is unique to this lake system, among American watersheds. The problem can only get more serious, and more serious with dramatic speed, unless it is properly addressed. While municipal, grant eligible sources constitute only a small portion of the toxics sources, they are a significant portion, and where plants receive toxic materials in quantity, require substantial additional treatment. This water quality-justified treatment requirement is expensive and urgent.

These needs are not merely a matter of public policy, but represent an international obligation on the part of the United States. Pursuant to Article IV of the Boundary Waters Treaty of 1909, neither country may pollute the boundary waters to the injury of health or property in the other state. While difficulties abound in drawing cause and effect relationships between toxic and phosphorus inputs, and cross-boundary impacts, on the other, it is clear that such effects have been and are and will continue to occur. While the Treaty itself does not define appropriate responses, and indeed implies that the only appropriate response is elimination of the violation, the two countries, by executive agreement, designed a structure for coordinated programs to reduce pollution of the Great Lakes.

This executive agreement, The Great Lakes Water Quality Agreement of 1978, draws its legal standing from the Boundary Waters Treaty, and from the executive powers of the agency, to adopt regulations as necessary to implement their programs. In addition to failing to adhere to the Civil Mandate of the 1909 Boundary Waters Treaty, the United States is failing to meet its more specific obligations, implementing that treaty, undertaken in the 1978 Water Quality Agreement. This includes the United States' undertaking to monitor, to achieve phosphorus reductions, and to make toxics substantially absent from the lakes.

Commentary on the allotment formula provided me by the Committee on Environment Public Works and entitled "Proposed Allotment Formula", does not address the question whether the funding for the Great Lakes is adequate to discharge the commitment of the United States under the Boundary Waters Treaty and the Water Quality Agreement.

I conclude that it is necessary to target funds to the Great Lakes basin, within the basin states, because several of those states (e.g., New York, Pennsylvania, Ohio, Illinois, Wisconsin) have a small minority of their territory and a minority of their population, within the Great Lakes basin. I conclude further that it is necessary to consider toxic treatment requirements as well as phosphorus siting facilities, and to require that facilities achieve the maximum feasible phosphorus reduction. This provision is intended to insure that communities which can feasibly adopt a land based treatment, will implement such systems. Finally, I conclude that an increase, not a decrease in funds is required to maintain progress toward meeting our international commitments.

I commend the Committee for its energy and foresight in addressing the management and rehabilitation of the Great Lakes. I believe that the Great Lakes Management Act of 1985, if inacted, will be a substantial step forward in insuring continued coordinated federal attention to the Great Lakes areas. Hopefully, it will insure proper consideration of Great Lakes needs in the funding process. I know from my experience that the people of the Great Lakes Basin, both in the United States and Canada, will derive extremely significant benefit from proper management of the Great Lakes.

Senator **Durenberger**. The first panel consists of Dr. Joseph Fletcher, Assistant Administrator for Oceanic and Atmospheric Research at NOAA, and Henry Longest, the Acting Assistant Administrator for Water at the EPA. Mr. Longest will be accompanied by Peter Wise, Director of the Great Lakes National Program Office in region 5, and Tudor Davies, Director of the Office of Marine Estuarine Protection.

Dr. Fletcher, we will start with you. I appreciate all of you being here.

Your statements will be made part of the record. You may summarize them or treat them whichever way you wish.

TESTIMONY OF JOSEPH FLETCHER, ASSISTANT ADMINISTRATOR, OCEANIC AND ATMOSPHERIC RESEARCH, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE; HENRY LONGEST, ACTING ASSISTANT ADMINISTRATOR FOR WATER, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY PETER WISE, DIRECTOR, GREAT LAKES NATIONAL PROGRAM OFFICE, REGION 5, AND TUDOR DAVIES, DIRECTOR, OFFICE OF MARINE ESTUARINE PROTECTION

Mr. **Fletcher**. Thank you, Mr. Chairman. I will present an abbreviated version and submit the full statement for the record.

I am pleased to appear here before you to discuss Federal research in the Great Lakes and S. 765, the Great Lakes Management Act of 1985. I will begin by sketching out the various activities of the five Federal agencies currently engaged in research in the region.

NOAA's research activities in the Great Lakes deals with the health of the lakes, their navigable problems and the quality and quantity of their waters. The Great Lakes Environmental Laboratory conducts research to improve our understanding of the impact of man-induced stresses on the lake system. Other research includes: Toxics contaminants and nutrient over-enrichment, which impact water quality, food chain interactions, lake levels, which impact navigation and shoreline property, the hydrologic cycle and river flows, ice formation and movement, which affect shipping, and natural hazards such as flooding, high waves and spills of hazardous materials.

NOAA is responsible for the National Sea Grant College Program, which includes six Great Lakes sea grant insitutions, all of which are funded by the Federal Government with matching grants from the States. The sea grant program in these Great Lakes States was established to promote the understanding and wide use of these fresh water areas.

Research, education, and advisory service are the three principal functions of the sea grant program.

The other Federal agencies working in the Great Lakes include the U.S. Fish and Wildlife Service; the Environmental Protection Agency; the Corps of Engineers and the Department of Agriculture.

The Fish and Wildlife Service, through its Great Lakes Fishery Laboratory at Ann Arbor, conducts research fundamental to assessment of the viability of Great Lakes fish stocks and has direct application to management and rehabilitation of these stocks and their habitats. The fishery laboratory is looking at such things as: Precipitation-borne phosphorus in the Great Lakes waters; the effects of parentally transferred contaminant on young fish, and the effects of high nutrient loading on fish spawning and nursery habitats.

The fishery lab also monitors such things as contaminants and incidence of tumors in fish and the chronic effects of polyaromatic hydrocarbons on fish and invertebrates.

The Environmental Protection Agency's research program, I am sure will be adequately covered by my colleague, so I shall not say more of that. The primary mission of the EPA Great Lakes National Program Office will also be described, I believe, by the next witness.

The Corps of Engineers, the next agency, conducts from time to time mission-oriented research as required to support the Great Lakes operations of the north-central division and its districts. Considerable research is focused on the effects of dredging operations and extended season navigation.

The Department of Agriculture conducts some basic and applied research on agricultural lands which drain into the lakes, including basic research on use and effects of agricultural chemicals on water quality, productivity, and erosion control.

I would like now to turn to section 5 of S. 765. This provision would establish within NOAA, a Great Lakes Research Office charged with the responsibility for: Identifying all ongoing research programs, including those of private organizations and other nations and update that inventory annually; for establishing a Great Lakes research data and information exchange center or service in order to facilitate rapid acquisition, retrieval, and dissemination of research results for the benefit of researchers, public decisionmakers, and the general public; for identifying the priority research needs of the Great Lakes; for conducting, through existing laboratories and the private sector, appropriate research and monitoring activities which address priority issues and needs in the Great Lakes; and cooperating with EPA in the operating of a Great Lakes systemwide surveillance monitoring system to monitor water quality in the Great Lakes, with specific emphasis on the monitoring of toxic pollutants.

The administration opposes S. 765. The President's budget contains funding to support critical Federal responsibilities in the Great Lakes.

The pollution research coordination functions proposed in S. 765 are largely being carried out pursuant to NOAA's responsibilities under the National Marine Pollution Planning Act.

Under that act, NOAA's National Marine Pollution Program Office: publishes annually an inventory of all federally funded research, development, and monitoring projects and programs concerned with ocean and Great Lakes pollution; it publishes periodically an inventory of nonfederally funded research and monitoring programs concerned with Great Lakes pollution; it maintains and provides access to a computer-based system that provides descriptions and specialized search capabilities concerning ongoing federally funded projects dealing with Great Lakes pollution; it is developing a computer-based catalog of all recent federally funded reports dealing with Great Lakes pollution; it has identified with the aid of other involved Federal agencies the priority pollution issues facing the Great Lakes; and it is developing with the other involved agencies a coordinated interagency action plan for research and monitoring focused on the high priority issues.

Mr. Chairman, this concludes my prepared statement. I will be happy to answer questions.

Senator DURENBERGER. Thank you, Dr. Fletcher.

Mr. Longest?

Mr. LONGEST. Mr. Chairman, it is a pleasure to be here this afternoon.

I am Henry Longest, the Acting Assistant Administrator for Water at EPA. To my immediate right is Peter Wise, who is the Director of our Great Lakes National Program Office located in Chicago and Dr. Tudor Davies, who is the Director of our Office of Marine and Estuarine Protection here at EPA headquarters and is also familiar with the various R&D underway in the Great Lakes.

We are pleased to have this opportunity to report to you on the Agency's pollution control efforts in the Great Lakes basin and to present EPA's views on S. 765.

The value of the Great Lakes cannot be overstated. Collectively they constitute one of the world's important water resources. Forty-five million people living in the Great Lakes basin, as well as others, can look to the Great Lakes as an important source of food, recreation, transportation, energy, beauty, and enjoyment.

We are also mindful of the fact that this great resource is a shared one. Four of the five Great Lakes, in addition to being interstate waters, are international waters. Since the Boundary Waters Treaty of 1909 established the International Joint Commission, this country and Canada have worked through binational agreements to address water quality concerns in the Great Lakes.

The Great Lakes Water Quality Agreement with Canada supports the objectives of the Clean Water Act by pledging the United States to solve the water quality programs of the Great Lakes Basin.

The Great Lakes National Program Office was established by EPA in 1977 to lead and facilitate the United States' activities pursuant to the Great Lakes Water Quality Agreements. This office conducts a full range of functions directed toward the protection and the enhancement of the water quality of the Great Lakes. The office undertakes, with its research vessel, the Roger R. Simons, and operates the Chicago Regional National Laboratory on a swing-shift devoted solely to Great Lakes analysis.

Demonstrable progress has been made in the Great Lakes in terms of pollution control, primarily in the area of conventional pollutants. The Federal Government, since 1972, has spent over $6 billion for the construction and upgrading of more than 1,000 municipal wastewater treatment facilities in the Great Lakes Basin. EPA also recently assisted in the development of detailed phosphorus reduction plans for five States in the Great Lakes area.

The overall results of the nutrient reduction program have been good. Now only in Lake Erie and Lake Ontario are ambient targets not being met for nutrients. In both of these cases, it is projected that they will meet their targets within the next few years.

While the nutrient control efforts are the good news, as in all U.S. water bodies, there is concern over toxic pollutants in the Great Lakes. Each of the lakes currently has fish consumption advisories due to bioaccumulation of toxics.

The current focus of the Great Lakes National Program Office has shifted to qualifying the magnitude of toxic pollutants from various sources to the Great Lakes system and to recommending remedial actions to deal with the problems.

For example, the Great Lakes National Office is working with the States to complete remedial action plans for some 30 areas of concern that have in place pollutant sediments.

We are committed to the goals of the Great Lakes Water Quality Agreements. The agency has supported the Great Lakes office with total resources, including work years and contract dollars, with an average of approximately $5.6 million for the period ending 1977 through the proposed 1986 budget request. This level of support has allowed us to meet our Great Lakes commitments and achieve environomental progress.

Therefore, legislation such as S. 765, expanding EPA's Great Lakes responsibilities is not needed to accomplish desired results, and it opposed by EPA.

In summary, Mr. Chairman, I can report to this subcommittee today that the efforts undertaken by the Great Lakes National Program office strongly reflect commitment by EPA to preserve and protect a valuable resource and that they echo the goals of the Clean Water Act to restore and protect fishable and swimable waters throughout the Great Lakes Basin. My staff and I stand ready to assist the committee in any way possible to discuss the Great Lakes program, and we would be pleased to answer any questions you may have today.

Senator **Durenberger**. Gentleman, I will ask you one question and then I am going to have to escape from here to start a meeting.

Senator Kasten can ask more detailed questions.

The administration, in 1981, recommended the abolition of the Municipal Waste Water Treatment Construction Grants program. In its 1986 budget, it proposed to terminate the Sea Grant Program; it proposed to terminate the Great Lakes Environmental Research Program area. Then what is left of a national commitment to implement the Canada-United States Water Quality Agreement on 1978?

Let's assume we wipe all that out and we don't have any Federal aid to municipal waste water. I probably missed some other things that aren't on the list here that the administration wants to wipe out, too.

But if we get rid of two research programs and we get rid of the Construction Grants Programs, then what do we have available to us, that you can tell this subcommittee, that will enable the United States to meet its obligations along the timeline set out in that 1978 agreement?

Mr. **Longest**. First, I would like to comment on the administration's position with regard to amending the Clean Water Act in

1981. As I recall the administration's proposal was not to end the Construction Grants Program. It proposed a zero appropriation in that year, unless Congress made some changes in the program. Congress did make changes in terms of the eligibilities and the dollars amounts, and the program has continued since that time.

I think it is important to note the fact that $6 billion has gone into pollution control in the Great Lakes Basin. That is important.

Tudor Davies may have some other comments on the R&D efforts. He was in the Office of Research and Development.

Mr. Davies. Historically, the EPA has supported the Great Lakes Research Program to the order of at least $2 million a year in the last couple of years. EPA has been very strongly involved with the Canadian Government and with the IJC in the conduct of whole Lake research and in the support of the Great Lakes Program Office is some of its surveillance activities.

So, there has been a continuing commitment from R&D to support to Great Lakes Program.

Senator Durenberger. But how much so that is supported outside the Sea Grant Program and the Great Lakes Environmental Research Laboratory? What is the dollar commitment by EPA?

Mr. Davies. EPA has had a program of a least $2 million a year for research support which has gone to the small research facility we have in Michigan.

Senator Durenberger. Mr. Fletcher, is it your opinion that that $2 million a year investment in EPA will accomplish the objective set out for research in the Wate Quality Agreement?

Mr. Fletcher. I believe it is the position of the administration that the primary obligations are in the hands of the lead Agency, which is EPA, which would be the remaining Agency with substantial presence in these activities on the lakes.

It is true that there would be little or no NOAA activity remaining.

Senator Durenberger. How about the issue of toxic substances? I think toxic substances has been identified as a major threat facing the Great Lakes. There is a GAO report back in 1982 that termed the lack of data as a major stumbling block to the U.S. efforts to control toxics. What steps has NOAA taken to get the handle on the work with toxics? Does work remain to be done in that area, or is that the responsibility of EPA?

Mr. Fletcher. The rising problem of toxic chemicals and their fate has claimed an increasing share of the attention of the Great Lakes Environmental Research Laboratory. About a third of their research activity is presently devoted to the study of this problem. We should be pleased to submit for the record a summary of their findings and field observations along with plans for continuation of this work.

Senator Durenberger. I think I am going t have to leave now. Bob, why don't you take over questioning, and then you can recess the hearing until I get back, and excuse these gentlemen.

Senator Kasten [presiding]. Mr. Chairman, thank you.

Mr. Longest, on page 4 of your testimony you list the various sources of toxic pollution of the Great Lakes. I am talking about sources including pesticides, land fill, et cetera.

Is that a comprehensive list?

Mr. LONGEST. Yes, it is a comprehensive list in terms of the types of toxics. As referred to, there are some 30 areas of concern with respect to in-place polluted sediments. Mr. Wise can identify the areas of where the toxics are and remedial programs to remove the toxics.

Senator KASTEN. What I am trying to get at is what are the greatest sources of toxic pollution of the Great Lakes?

What concerns me is that airborne toxic pollution isn't even listed here. Why is it not listed? Isn't it important? From my understanding, from the little bit of study that we have done, airborne toxic pollution could be the most serious and would head that list.

Mr. WISE. If I might, the National Program Office has operated a Great Lakes Atmospheric Deposition Network since 1981 to look at that very issue. There are technical uncertainties about our network. It is exactly what we are finding. The Canadians run a similar network.

Certainly, some scientists have indicated that up to 60 or 70 percent of some pollutants, pesticides like Toxaphene and DDT, are still coming into the Great Lakes system from the atmosphere. Our approach is to trying to get a better handle over the next few years as to exactly what the magnitude of that problem is. It could be serious. We are not really sure because of the scientific uncertainty.

Senator KASTEN. Who wrote the testimony? Together, or you wrote it?

Mr. LONGEST. It was a joint effort.

Senator KASTEN. Did you intentionally omit the discussion of airborne toxic pollution, or was the testimony altered by someone outside the Agency?

Mr. LONGEST. I did not intentionally omit that.

Senator KASTEN. You did not. Was it altered by somebody outside the Agency?

Mr. LONGEST. All testimony goes under review by numerous people outside the Agency.

Senator KASTEN. Is it possible that the testimony could have been changed by people who went through this testimony, either downtown or, specifically, at OMB?

Mr. LONGEST. That is possible. It is always possible.

Senator KASTEN. Has that, in fact, occurred?

Mr. LONGEST. All testimony is reviewed. Modifications are made to it as it goes through the review process.

Senator KASTEN. I understand that, I am just asking you, from the position of the Agency, it seems to me that in all the things that we have worked with your people on, you always said this was important. Was this testimony altered by someone at OMB on the specific point of airborne toxic pollution?

Mr. LONGEST. Yes, it was.

Senator KASTEN. It was. OK. We are all trying to do our jobs here. I think that that is important.

Would you describe briefly, Mr. Wise, what we are doing or what you were in the process of doing to identify the mechansims of airborne deposition of toxic pollution? Do you believe that additional work needs to be done in order to come to terms with this problem?

Specifically, what are you doing, and how much will it be costing? Either of you can respond to that.

Mr. WISE. Our 1986 budget request calls for continued funding for the atmospheric network to analyze some of the significant technical problems we have with that particular network. We run 36 stations throughout the Great Lakes Basin now. We analyze the samples.

We need to expand the analysis for certain different kinds of chemicals. We need to resolve the quality assurance problems that we have, and we plan to do that within our 1986 budget submission at this point.

Senator KASTEN. In your view, is the concentration of toxics going up or down today in the Great Lakes?

Mr. WISE. In Great Lakes fish and herring gull studies concentrations of toxic pollutants such as PCB's, DDT, and toxaphene have been drastically reduced due to the banning of the use of such chemicals.

Mr. LONGEST. I would like to add one thing to that. The comment was made earlier by Mr. Sugarman regarding the present treatment program.

This is our biggest year in terms of approval of pretreatment programs at wastewater treatment facilities, including those facilities discharging into the Great Lakes Basin.

Those programs are just beginning, but I think it is important to make you aware of them, because it should be the first major step in reducing toxics that are discharged through treatment plants.

Senator KASTEN. Dr. Fletcher, can you comment on the merits of increased coordination of research efforts on the Great Lakes? It seemed to me that at least the beginning of your testimony was testimony that was strongly pointing out the need for greater coordination. You went through the same kind of laundry list that I have had in different hearings that we have done. The fact is that in many cases, these people are not coordinated.

First of all, could you comment on it? Are you in favor of increased coordination of research efforts? If you were going to coordinate the research, how would you do it?

Mr. FLETCHER. I believe there already is a substantial amont of coordination at the working levels, especially between the agencies who have responsibilities in the Great Lakes. There is always room for improvement of that, and I think surely, we are in favor of improved coordination among these activities.

Senator KASTEN. If you were to move in that direction toward improved coordination, could you do this without a specific appropriation? Wouldn't it be more productive if, in fact, there was a specific appropriation to move toward greater coordination of research?

Mr. FLETCHER. This, no doubt, would be helpful.

Senator KASTEN. So essentially, what you are saying is that NOAA really supports the contents of our legislation, but the administration, or again, OMB, objects in terms of the additional funds? Do you want to just make a comment on that? Am I right?

Mr. FLETCHER. I think my comment will be, I am pleased to carry the responsibilities of my job, and these include the support of the budget goals of the administration, as well, even though in individual instances, they may be painful.

Senator KASTEN. I appreciate your candor. [Laughter.]

I just want to say to you that we on the committee want to work with the administration, also, but there are times that we think that we have to reestablish or emphasize certain kinds of priorities. I understand the difficulty that both of you find yourselves in with the testimony today, but I just think it is important to point out publicly the fact that there is an awful lot of support for this concept among people in the field, among people in both of your agencies a great concern that we are not doing enough.

I think that the previous witness' testimony, he not representing the administration, pointed out the great concern that we have got in living up to the treaty and the agreements, and frankly, I think all of us recognize the merits of increased coordination of research effort, even if it does result in a slight increase in appropriation or in a reallocation of money from one area to another.

I want to thank you all for your testimony. I, too, have a number of questions that we will submit to you in writing.

At this time, I will recess the hearing until Senator Durenberger returns. He told me it would probably be 15 minutes I am now supposed to be going to a meeting he is now beginning. Our schedules today are complicated, but we look forward to working with you and thank you for your testimony.

Mr. LONGEST. Are you asking for the panel to remain?

Senator KASTEN. No, excuse yourself, and the next panel can come up and be ready when Senator Durenberger comes back.

Thank you for your testimony, and as I said, there will be a number of questions that will come to you in writing.

The committee will stand in recess.

[A brief recess was taken.]

[The prepared statements of Dr. Fletcher and Mr. Longest; and responses to written questions of Mr. Longest follow:]

PREPARED STATEMENT OF DR. JOSEPH O. FLETCHER, ASSISTANT ADMINISTRATOR FOR OCEANIC AND ATMOSPHERIC RESEARCH, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE

Mr. Chairman and members of the subcommittee, I am Joseph Fletcher, Assistant Administrator for Oceanic and Atmospheric Research (OAR) of the National Oceanic and Atmospheric Administration (NOAA). I am pleased to appear before you today to discuss Federal research in the Great Lakes and S. 765, the Great Lakes Management Act of 1985. I will begin by sketching out the various activities of the five Federal agencies currently engaged in research in the region.

NOAA's research activities in the Great Lakes deals with the health of the lakes, their navigational problems, and the quality and quantity of their waters. The Great Lakes Environmental Research Laboratory (GLERL), conducts research to improve our understanding of the impact of man-induced stresses on the natural lake system. Other research includes, but is not limited to: (1) toxic contaminants and nutrient over-enrichment which impact water quality; (2) food chain interactions; (3) lake levels which impact navigation and shoreline property; (4) the hydrologic cycle and river flows; (5) ice formation and movement which affect shipping; and (5) natural hazards such as flooding, high waves and spills of hazardous materials.

NOAA is responsible for the National Sea Grant College Program which includes six Great Lakes Sea Grant institutions (Illinois-Indiana, Michigan, Minnesota, New York, Ohio, and Wisconsin), all of which are funded by the Federal Government with matching grants from the States. The Sea Grant College Program in these Great Lakes States was established to promote the understanding and wise use of these freshwater areas. Research, education, and advisory service are the three principal functions of the program.

The specific activities supported by GLERL and these local Sea Grant programs primarily benefit local and regional interests. As a result, the President's FY 1986 budget terminates Federal funding for these programs. This would transfer financial responsibility to the immediate beneficiaries instead of the general taxpayer.

The other Federal agencies working in the Great Lakes include U.S. Fish and Wildlife Service, Environmental Protection Agency, the Corps of Engineers; and the Department of Agriculture which engage primarily in research and monitoring to satisfy such mission-oriented goals as wildlife preservation, agricultural productive flood control, and water quality.

The U.S. Fish and Wildlife Service through its Great Lakes Fishery Laboratory at Ann Arbor conducts research fundamental to assessment of the viability to management and rehabilitation of these stocks and their habitats. The Fishery Laboratory is looking at such things as: the bioavailability of precipitation-borne phosphorous in Great Lakes waters, the effects of parentally-transferred contaminants on young fish, and the effects of high nutrient loading on fish spawning and nursery habitats. In the assessment area the Fishery Laboratory monitors such things as contaminants and incidence of tumors in fish, and the chronic effects of polyaromatic hydrocarbons on fish and invertebrates.

The Environmental Protection Agency's (EPA) research program in the Great Lakes is primarily directed toward the regulatory mission of the Agency and the Clean Water Act. The emphasis of the program is on transport, fate, and effect of toxic substances and focuses on particular areas of concern. Within a study area, monitoring and experimentation is conducted to obtain input and calibration data for development, refinement and calibrating of chemical exposure and dose models.

The primary mission of the EPA Great Lakes National Program Office (GLNPO) in Chicago is implementation of the United States-Canada Great Lakes Water Quality Agreement of 1978. The GLNPO supports the EPA Regional Administrator in his role as the U.S. co-chairman of the Water Quality Board, which was established to oversee implementation of the 1978 Agreement. The GLNPO also conducts monitoring of conditions and trends in the lakes. This includes lake-wide annual water sampling, tissue sampling of sport fish to determine pollutant hot spots, a special 3-year study of conditions and pollutant sources of the St. Clair and Detroit Rivers, and monitoring atmospheric deposition with a network of 36 monitoring stations.

The Corps of Engineers conducts, from time-to-time, mission-oriented research as required to support the Great Lakes operations of the North Central Division and its Districts. Considerable research is focussed on the effects of dredging operations and extended season navigation.

The Department of Agriculture conducts some basic and applied research on agricultural lands which drain into the lakes, including basic research on use and effects of agricultural chemicals on water quality, productivity and erosion control.

I would like now to turn to Section 5 of S. 765. This provision would establish within NOAA, a Great Lakes Research Office charged with the responsibility of: (1) identifying all ongoing research programs including those of private organizations and other nations, and update that inventory annually; (2) establishing a Great Lakes research data and information exchange center or service in order to facilitate rapid acquisition, retrieval, and dissemination of research results for the benefit of researchers, public decision-makers, and the general public; (3) identifying the priority research needs of the Great Lakes; (4) conducting through existing laboratories and the private sector appropriate research and monitoring activities which address priority issues and needs in the Great Lakes; and (5) cooperating with EPA in the operating of a Great Lakes systemwide surveillance and monitoring system to monitor water quality in the Great Lakes, with specific emphasis on the monitoring of toxic pollutants.

The Administration opposes S. 765. The President's budget contains funding to support critical Federal responsibilities in the Great Lakes. The types of research and information activity to be carried out by the proposed Great Lakes Research Office will primarily benefit local and regional interests are unnecessary, and will duplicate existing programs. It is more appropriate for those beneficiaries, not the general taxpayer, to support those activities. If we are ever to reduce the deficit, we must limit Federal spending to those programs which are clearly high Federal responsibilities. The programs proposed in S. 765 are not essential to meeting high priority Federal responsibilities in the Great Lakes.

The research coordination functions proposed in S. 765 are already largely being carried out pursuant to NOAA's responsibilities under the National Marine Pollution Planning Act. Under the Act, NOAA's National Marine Pollution Program Office:

(1) Publishes annually an inventory of all Federally-funded research, development and monitoring projects and programs concerned with ocean and Great Lakes pollution;

(2) Publishes periodically an inventory of non-Federally funded research and monitoring programs concerned with Great Lakes pollution;

(3) Maintains and provides access to a computer based system that provides descriptions and specialized search capabilities concerning ongoing Federally-funded projects dealing with Great Lakes pollution;

(4) Is developing a computer based catalog of all recent Federally-funded reports dealing with Great Lakes pollution;

(5) Has identified with the aid of the other involved Federal agencies, the priority pollution issues facing the Great Lakes (i.e. toxic chemicals pollution, nutrient over-enrichment, habitant modifications, and water quantity changes); and

(6) Is developing with the other involved agencies a coordinated interagency action plan for research and monitoring focused on the high priority issues.

Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions.

PREPARED STATEMENT OF HENRY L. LONGEST, ACTING ASSISTANT ADMINISTRATOR FOR WATER, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. Chairman and members of the Subcommittee, it is a pleasure to appear before you this afternoon. I am Henry Longest, Acting Assistant Administrator for Water at EPA. Peter Wise, Director of our Great Lakes National Program Office in Chicago, and Tudor Davies, Director of our Office of Marine and Estuarine Protection here at EPA headquarters, are with me today. We are pleased to have this opportunity to report to you on the Agency's pollution control efforts in the Great Lakes Basin and to present EPA's views on S. 765. Through national regulatory programs, state decisions, and specific Great Lakes programs, the Lakes have been significantly upgraded. Remaining pollution concerns, which are not unique to the Great Lakes, are continuing to be addressed by other EPA and state programs. Therefore, EPA opposes S. 765 as being unnecessary.

The value of the Great Lakes cannot be overstated. Collectively they constitute one of the world's important water resources. Consider, if you will, these statistics. Together the Great Lakes comprise the largest body of fresh water in the world. With a capacity of over 65 quadrillion gallons of water, the Great Lakes provide 95 percent of the U.S. supply and 20 percent of the world's supply of fresh water. Indeed, one U.S. citizen in 10 receives his water supply from the Great Lakes. The 45 million people living in the Great Lakes basin as well as the others can look to the Great Lakes as an important source of food and recreation, transportation, energy, beauty and enjoyment.

We are also mindful of the fact that this great resource is a shared one. Four of the five Great Lakes in addition to being interstate waters are international waters. Since the Boundry Water Treaty of 1909 established the International Joint Commission, this country and Canada have worked through binational agreements to address water quality concerns in the Great Lakes. The 1970 study by the Commission of nutrients and toxics problems, especially as they concerned Lake Erie and Lake Ontario eutrophication led to the first Great Lakes Water Quality Agreement in 1972 with Canada. The Agreement supports the objectives of our Clean Water Act. It pledges the United States to solving the water quality problems of the Great Lakes Basin. The Agreement was updated in 1978 to include a focus on toxic problems in the basin.

The Great Lakes National Program Office was established by U.S. EPA in 1977 to lead and facilitate the United States activities pursuant to the Great Lakes Water Quality Agreements. This Office conducts a full range of functions directed toward the protection and enhancement of the water quality of the Great Lakes.

The majority of the resources of the Office go to surveillance and reporting. The Office undertakes open lake monitoring with its research vessel, the Roger R. Simons and operates the Chicago Regional Laboratory on a swing-shift devoted solely to Great Lake analysis. This analysis includes water chemistry, and biology, including fish and sediment. The Office also assists in special studies including the recently completed Niagra River Task Force report and the ongoing Upper Great Lakes Connecting Channels study. Finally, the Great Lakes National Program

Office has completed a number of demonstration projects on various pollution control techniques.

Despite their size, the Lakes are especially sensitive to environmental insult. Only 1 percent of the water entering the Great Lakes system flows out the St. Lawrence River in any one year, leaving toxic pollutants to accumulate in bottom sediments and fish. The most obvious problems were clearly apparent in the 1960's as mentioned earlier. Since that time and as a result of joint U.S.-Canadian efforts, significant and demonstrable progress has been made in the Great Lakes in terms of pollution control. The success has primarily been in the area of conventional pollutants. The Federal government, since 1972, has spent over six billion dollars for the construction and upgrading of more than one thousand municipal sewage treatment facilities in the Great Lakes Basin. EPA also recently assisted in the development of detailed phosphorus reduction plans for five of the Great Lakes states. These plans feature the States' proposals to use nonpoint source programs in dealing with agricultural runoff problems in the basin. The overall results of the nutrient have been good. Now, only in Lake Erie and Lake Ontario are ambient targets not being met for nutrients. In both of these cases, it is projected that they will meet their targets within the next few years. We are pleased to report that what was once considered a dying water resource has been responsive to nutrient control efforts.

While the nutrient control efforts are the good news, as in all U.S. water bodies, there is concern over toxic pollutants in the Great Lakes. Each of the Great Lakes currently has fish consumption advisories due to the bioaccumulation of toxics in Great Lakes fish. All of the states bordering Lake Michigan have issued joint fish advisories and the other Great Lakes states are expected to participate shortly in the effort.

The current focus of the Great Lakes National Program Office has shifted to quantifying the magnitude of toxic inputs from various sources to the Great Lakes system and to recommending remedial actions to deal with the problems. These sources include: pesticides runoff from nonpoint sources, groundwater contamination, landfill leachate, and in-place polluted sediments.

In the area of in-place polluted sediments, for example, the Great Lakes National Program Office is working with the states to complete remedial action plans for some 30 areas of concern. All of these areas of concern have in-place polluted sediments such as PCBs and pesticides. The Great Lakes National Program Office expects to track and develop options for the removal, treatment and disposal of these sediments.

We are committed to the goals of the Great Lakes Water Quality Agreement. The Great Lakes National Program Office has a proven track record working with our authorities under the Clean Water Act and our other remedial programs. Much has been accomplished in the Great Lakes basin and EPA recognizes that certain problems still remain. Nonetheless, it is clear that new authority is not required to accomplish the desired results. The Agency has supported the Great Lakes Office with total resources, including work years and contract dollars, with an average of approximately $5.6 million for the period FY 1977 through our FY 1986 budget request. This level of support has allowed us to meet our Great Lakes commitments and achieve environmental progress. After years of research, it is apparent that the vast majority of pollution problems in the Great Lakes Basin are being addressed by national and state programs. National point source programs control conventional and toxic pollutants while state nonpoint source programs control such things as agricultural runoff. Legislation, such as S. 765, expanding EPA's Great Lakes responsibilities is therefore not needed.

In summary, Mr. Chairman, I can report to this Subcommittee today that the efforts undertaken by the Great Lakes National Program Office strongly reflect the commitment by EPA to preserve and protect a valuable world resource and that they echo the goals of the Clean Water Act—to restore and protect fishable and swimmable waters throughout the Great Lakes Basin.

My staff and I stand ready to assist the committee in any way possible so that the directions of the Act for the future as it relates to the Great Lakes program can be set and then achieved.

EPA RESPONSES TO SENATOR DURENBERGER'S QUESTIONS OF MAY 22, 1985

Question. 1(a). What actions has EPA taken in response to the GAO recommendations? What actions does EPA plan to take?

Answer. The Agency has continued to work and has achieved measurable progress since 1972—in part through the Great Lakes National Program Office—to meet its obligations and objectives under the Water Quality Agreement with Canada, including a number of areas cited in the GAO report of 1982.

For Example:

Municipal pollution sources: The municipal treatment facilities for the most part are now meeting or bettering the 1 mg/L phosphorus limitation established in the U.S./Canadian Agreement.

Nonpoint pollution sources: The Great Lakes office is completing an extensive 31 county nonpoint source control demonstration in the Maumee River Basin, the major western tributary of Lake Erie, and has sponsored a number of other NPS control demonstrations. Next on the list is CSO demonstrations to test new and innovative control techniques.

Phosphorus control: The U.S. entered into a phosphorus control planning agreement with the Canadians in October of 1983. The five state plans to bring eutrophication in Lake Erie, Lake Ontario, and Saginaw Bay under control have been completed and have been combined into the U.S. plan, which is now being reviewed by headquarters prior to its submittal to the International Joint Commission.

Toxic pollution: The binational Niagara River Toxics Committee Report was completed a few months ago and the Agency is preparing a response to the report's 24 recommendations in cooperation with our Region II in New York and the State of New York.

The Great Lakes office has developed a 5 year strategy to identify and quantify toxics fate and transport and as a basis for developing a mass balance to be used in designing abatement programs.

While the Niagara toxics study was wrapping up, the Great Lakes office moved ahead with the Upper Great Lakes Connecting Channels study of the Detroit, St. Clair and St. Marys Rivers which will develop recommendations comparable in scope to those of the Niagara Study.

Our laboratories at Duluth and Grosse Isle are moving into the final phases of toxics and toxic impacts studies for the Rouge River near Detroit and the Fox River/Green Bay area of Wisconsin. The studies are expanding our knowledge of toxics fate and transport, as well as the impacts on fish reproduction.

Water quality monitoring: The Great Lakes office has made substantial progress in improving its multi-media monitoring program for water quality, air deposition and, fish/sediment sampling. These programs are using more sophisticated statistical methods to improve the reliability of the monitoring data and are saving money while doing it.

In short, the Agency is—through its normal planning and programming processes—responding to the objectives and obligations set out in the Water Quality Agreements.

Question. 1(b). Has EPA established an Agency-wide structure for its Great Lakes activities? If it has, please describe the structure and how it is working. If it has not, please explain why?

Answer. The Great Lakes National Program office was established in 1977 to operate under the immediate direction of the Regional Administrator of Region V Chicago and to take lead responsibility in meeting obligations set out in the Water Quality Agreements with Canada, including working with Region II in New York and Region III in Philadelphia.

The Great Lakes Office's direct linkage to Agency headquarters was established in the Office of Water Regulations and Standards following the 1983 Agency oversight of the program. The linkage has now been shifted to the Office of Marine and Estuarine Protection, which has responsibility for representing the Great Lakes program in the Agency's policy, guidance, research, planning, and budgetary processes, and in maintaining a continuing program liaison. This includes liaison with other offices within EPA including Office of International Activities, Office of Research and Development, Office of Toxics Substances, Office of Policy, Planning and Evaluation, and the Office of Solid Waste and Emergency Response. It also includes other federal agencies, including Department of Agriculture, Department of State, Department of Commerce, Department of Interior and, Department of Defense (Corps of Engineers).

Question. 1(c). In its May 1982 report, GAO pointed out that funding cuts prevented the Program Office from meeting many of its agreement responsibilities. Since FY81, funding has declined from $6.1 million to $4 million in FY84. EPA estimates that $5.2 million will be spent in FY85. Your FY86 request is for $4.9 million. In view of these cuts, how does EPA expect the Office to continue to function effectively?

Answer. While there have been some ups and downs in the Great Lakes resources, the budget for the Great Lakes office has averaged $5 million annually for the period FY 1983 through the FY 1986 Agency request. The effectiveness of the Agency's programs can be most easily measured through the continuing improvement in Great Lakes water quality over the past 10 years.

The summary of the funding since the Great Lakes office was established is as follows:

	Positions	Contract resources in (millions)
Year:		
1977	27.0	$4.0
1978	36.0	7.5
1979	22.0	6.4
1980	20.5	6.5
1981	25.0	6.0
1982	22.0	5.4
1983	25.0	4.8
1984	25.5	[1] 4.0
1985	26.0	5.2
1986 (request)	20.0	4.9
1977–86 average	22.2	5.6

[1] Plus $1,300,000 carryover.

Question. 2(a). Are all of the Soviet Lakes Basin waste treatment facilities complete? If not, what is the current estimate for completion of facilities under construction that would provide adequate treatment for all of the sewered population?

Answer. All the major treatment facilities are in place and in operation. They are now, for the most part, meeting or bettering the phosphorus limit of 1 mg/L.

Question. 2(b). What impact would the proposed changes in the municipal construction grants program formula have on providing funding for needed Great Lakes municipal treatment facilities.

Answer. Please reference the attached table, which shows the current Great Lakes States needs and the two allocations now under consideration in the Congress.

NEED AND ALLOCATION FOR GREAT LAKES STATES

State	Percent of national population			Year 2000 total need		Year 1990 eligible need		Current allocation	Percent of fiscal year 1985 national allocation	Senate allocation	Percent of fiscal year 1985 Senate allocation	Difference	Percent difference
	1990	1980	2000	Total (percent)	Amount (millions)	Total (percent)	Amount (millions)						
Illinois	4.7	5.0	4.4	4.0	$4,344	4.1	4,202	108,982,764	5.6	87,186,211	3.7	(21,796,553)	(1.9)
Indiana	2.3	2.4	2.2	2.0	2,200	2.1	2,142	58,074,024	2.6	46,459,219	2.0	(11,614,805)	(0.6)
Michigan	3.8	4.0	3.7	3.4	3,729	3.5	3,612	103,611,756	5.3	82,889,405	3.5	(20,722,351)	(1.8)
Minnesota	1.7	1.8	1.6	1.5	1,622	1.5	1,562	44,289,540	1.9	35,431,632	1.5	(8,857,908)	(0.4)
New York	7.3	7.6	7.1	14.2	15,489	14.9	15,184	267,361,308	10.9	213,889,046	9.0	(53,472,262)	(1.9)
Ohio	4.5	4.7	4.4	4.7	5,075	4.7	4,834	135,653,412	5.7	108,522,730	4.6	(27,130,682)	(1.1)
Pennsylvania	4.9	5.2	4.6	4.5	4,955	4.7	4,749	95,451,228	4.7	73,360,982	3.1	(22,090,246)	(1.6)
Wisconsin	2.0	2.0	2.0	1.7	1,876	1.8	1,821	65,144,748	1.9	52,768,070	2.2	(12,376,678)	0.3
Great Lakes States percent share of total population	31.2	32.7	30.0	36.0	39,290	37.3	38,106	878,568,780	38.6	700,507,295	29.6	(178,061,485)	(9.0)

Note.—This data is based on information for the entire State, and not just that portion of the State tributary to the Great Lakes.

Question. 3(a). What steps have been taken to assure that the (Great Lakes Water Quality) agreement's objectives are being met?

Answer. The GAO report in 1982 based its failing grade for the Agency on five points: lagging municipal treatment facility construction, inadequate phosphorus control, little attention to NPS control, failure to address toxics problems, and lack of adequate monitoring.

The response to each of these points as follows:

The major treatment facilities are now on line and operating—most are meeting the phosphorus limit and many are well under the limit—to the extent that we are now meeting our Agreement obligations to Canada.

Phosphorus—through municipal treatment, detergent phosphorus bans, and limited nonpoint source control—is being controlled as provided under the terms of the Agreement.

Nonpoint source controls are the major element in the state level phosphorus control plans, which have been combined to establish the U.S. plan for completion of its phosphorus control program obligations.

The International Joint Commission has identified 31 Areas of Concern—primarily due to the toxic contamination—the Great Lakes office is working with State and local governments to address these problems through the development of Remedial Action Plans which are to be completed during the next two years.

The Great Lakes office's monitoring program continues to be an outstanding example of effectiveness in dealing with the complex Great Lakes eco-system, in using statistical methods to improve program data, in taking a multi-media approach, and in dealing with Canadian technicans on sensitive OA-OC issues.

Question. 3(b). What remains to be done (to meet U.S. obligations under the agreement)?

Answer. Under the provisions of Article VI of the Great Lakes Water Quality Agreement and as detailed in the Agreement Annexes, the following programs and measures are being implemented:

Pollution from Municipal Sources: This system is substantially in place, but further improvement in municipal treatment facilities and permit compliance are needed.

Pollution from Industrial Sources: The effluent guidelines, permitting and enforcement systems are substantially in place, and improvements are in progress but further work remains for each element of the system.

Inventory of Pollution Abatement Requirements: This inventory is being conducted and reported annually as required.

Eutrophication (Annex III): Work in this area is being expanded under the provisions of the 1983 Phosphorus Control Subagreement which resulted in the development of the U.S. plan for phosphorous control in Lake Erie, Lake Ontario, and Saginaw Bay. The plan which is nearing completion will be submitted to the International Joint Commission this year.

Pollution from Agriculture, Forestry, and other Land Use Activities: Work is underway to control various pollutant sources through the range of federal and state pollution control regulation and programs. Demonstrations of control techniques, educational programs and enforcement at all levels of government—federal, state and local—are a continuing need.

Pollution from Shipping Activities: The U.S. Coast Guard has a continuing program underway with their Canadian counterparts to meet the requirements of Annexes IV, V, VI, and IX as they relate to shipping and joint spill contingency planning. These are on-going activities.

Pollution from Dredging Activities (Annex VII): The Corps of Engineers has ongoing program responsibilities in this area.

Pollution from On-shore/Off-shore Facilities, Hazardous Substances, Toxics, Airbourne Pollutants (Metal & Toxics): These pollutants and pollutant sources are being regulated and controlled under the various Agency regulations on an on-going basis.

Surveillance and Monitoring: This on-going requirement is being met by the Great Lakes National Program Offices multi-media monitoring program. Following the successes in controlling nutrient pollution, the major remaining problem to be addressed is toxic contamination—trace levels in the water column—at significant levels in the sediments of many industrial harbors—and at dangerous levels in sports and commercial fish. Our resources are now shifting to address this problem through a comprehensive multi-media approach based on the 5 year strategy to identify and quantify toxics fate and transport. We expect the Great Lakes National Program Office to provide leadership in this effort as they have done in the nutrient control program over the past 8 years.

Question. 4. What is our current status for living up to the commitments of the Water Quality Agreement of 1978?

Answer. In summary, the current status of the U.S. efforts to meet our objectives and obligations as set out in the 1978 Agreement are as follows:

Water quality standards were revised in 1983 for the increased protection of water supplies, aquatic life, recreational and other uses;

Increasing emphasis is being placed on regulation of toxic and nonconventional pollutant discharges through water quality standards, monitoring requirements, and effluent limits in NPDES permits;

The U.S. portion of the Great Lakes basin was reported to have an overall compliance rate of 76.5% for municipal dischargers and 82.0% for industrial dischargers in 1983;

Various federal statutes, such as, the Resoruce Conservation and Recovery act (RCRA), the Toxics Substances Control Act (TSCA), the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), are being enforced by the Agency to improve the environmental quality in the Great Lakes basin;

Region V established an In-Place Pollutants Task Force and is developing a coordinated response to this national problem; and

Current monitoring programs for water quality, sediments, fish and wildlife are being improved through the application of statistical methods, increased binational coordination, and more comprehensive OA–OC procedures.

Details on the achievements of the U.S. and Canada in meeting the objectives and obligations as set out in the 1978 Agreement are compiled annually by the binational Great Lakes Water Quality Board in its report to the International Joint Commission. A copy of this annual report is expected to be available by the end of June 1985 and will be provided to the Committee at that time.

Question. 5. Who negotiated and signed the Water Quality Agreement? What institutions?

Answer. The 1978 Water Quality Agreement was signed on November 22, 1978, by Don Jamieson, Secretary of State For External Affairs and Len Mouchand, Minister of Fisheries and Environment for the Government of Canada and by Cyrus R. Vance, then Secretary of State and Barbara Blum, then Deputy Administrator of the Environmental Protection Agency for the Government of the United States, having been negotiated by the above mentioned agencies of the two governments.

Question. 6. Do the states have the Constitutional authority to make treaty obligations with another nation?

Answer. No. Article I, Section 10 of the Constitution specifically prohibits states from entering into treaties and hence they also cannot conclude other types of international agreements or undertake to conduct foreign relations with other nations.

Question. 7. If not, does this authority lie with the federal government?

Answer. Yes. Article II, Section 2 of the Constitution grants the President the power to make treaties with other nations with the advice and consent of the Senate.

Question. 8. If this authority lies with the federal government, how can the federal government expect the states to fulfill the federal responsibilities?

Answer. Commitments made by the Federal government are made with the understanding that they are reasonable, that they will accomplish their intended goals, and that they are implementable within the federal system. States play a major role as a part of this system. The Environmental Protection Agency has various means of ensuring that its commitments can be met. They include grant assistance for the construction of treatment plants and regulatory requirements for adherence to many provisions of environmental statutes. EPA has also joined states in implementing programs outside the immediate influence of the construction and regulatory programs. Actions are implemented under cooperative agreements under programs such as those authorized under sections 106, 208, and 303(e) of the Clean Water Act.

Question. 9. Isn't it the responsibility of the federal government to fulfill the obligations it makes?

Answer. It is the responsibility of the federal government to see that the obligations it makes are fulfilled. In this case, as noted in the response to Question 8, many different procedures can be combined to assure that this happens.

Senator DURENBERGER. The hearing will come back to order.

On the second panel we have Tom Martin, director, Office of Great Lakes of the State of Michigan; Christian Ballantyne, midwestern representative for the Sierra Club; Dr. Donald McNaught, director of the Minnesota Sea Grant Institute; and Dr. Bob Ragotzkie, director, Wisconsin Sea Grant Institute.

We have your statements, gentlemen, which will be submitted into the record. If you could limit your testimony to five minutes or so, we would appreciate it a great deal. Take seven if you need.

Tom Martin.

TESTIMONY OF THOMAS D. MARTIN, DIRECTOR, OFFICE OF GREAT LAKES, STATE OF MICHIGAN; CHRISTIAN BALLANTYNE, MIDWESTERN REPRESENTATIVE OF THE SIERRA CLUB; DONALD McNAUGHT, DIRECTOR, MINNESOTA SEA GRANT INSTITUTE; AND ROBERT A. RAGOTZKIE, DIRECTOR, WISCONSIN SEA GRANT INSTITUTE

Mr. **Martin**. Yes, thank you, Mr. Chairman.

It is a pleasure to have the opportunity to comment on the Great Lakes Management Act. My Governor, Jim Blanchard, has long been concerned about having comprehensive Federal management of its Great Lakes programs. When he was in Congress, he introduced the Great Lakes Protection Act, and I believe that many of the concepts in the Management Act are consonant with his concept.

I would prefer at this point to skip over my testimony on that bill and have it as part of the record. I would like to move to another matter that I believe is very important to all of us in the basin.

We were all very distressed to learn that the Environmental and Public Works Committee has altered the traditional needs-based waste water treatment grant allocation formula. The net effect of this alteration is to remove resources away from the Great Lakes, where 95 percent of our surface fresh water is stored. The Great Lakes aren't just another body of water. They have no equal anywhere on Earth. Lake Superior has the greatest surface water of any fresh water lake in the world. Lake Huron is 5th, Lake Michigan is 6th, and Erie 11th. One in 10 Americans gets their drinking water from these lakes. Millions eat fish caught in these waters.

Millions more swim. The States around the Great Lakes represent one-third of all boating registrations in the United States. Much more of our Nation's industry and agriculture and industries are also based around the lakes. The message, I think, is clear. These lakes provide our entire Nation with a great resource, and the value of that resource is upon having clean water.

We have explicit waste water treatment responsibilities outline in the water quality agreement of 1978. Mr. Sugarman touched on some of them, but there is a specific provision which I think we should focus on. Article VI of that agreement sets out clear requirements for our Nation to fulfill, including, "The provision of financial resources to ensure prompt construction of needed facilities."

Those facilities are waste water treatment facilities. It is specific language. Further, annex 3 of the agreement calls for the control of phosphorus and other nutrients, and specifically addresses, again, the role of the Federal Government in providing municipal waste water treatment facilities.

Make no mistake about it, the new allocation formula will hurt our efforts for clean Great Lakes water. Using Michigan as the only States wholly within the Great Lakes drainage basin as an example, the effects of this proposal, become very clear. We have identified 16 communities in our State that must upgrade to secondary treatment facilities by July of 1988 under the provisions of the Clean Water Act. Another 35 sites are under order or a permit schedule to upgrade their facilities. Finally, 36 other projects have been identified as having a human health hazard right now.

Attached to my testimony is a list of projects that will be funded under the old formula versus what would happen if this new formula takes effect. The message, once again, is clear. What will happen is that plants that now dump raw sewage into the Great Lakes basin will have to wait to be cleaned up.

The fact is that waste water treatment facilities, built as a result of the grant program, have made the Great Lakes cleaner. Just yesterday I was talking with our administrator, who is a big bass fisherman. We were talking about the Kalamazoo River, where the last two waste water treatment facilities will go on line this summer. That river spills into Lake Michigan. He believes that within the next couple of years, bass fishing is going to return to that river.

Take a look at Lake Erie and what has happened there. The phosphorus and other nutrient pollution that had people saying Lake Erie was dead during the seventies has been removed, and that was done in large part, once again, through waste water treatment grant programs.

A final place in Michigan where we see the effects is in Saginaw Bay. A study was done there by the EPA large lakes research facility at Grosse Ile, and they found that phosphorus loadings decreased significantly because of waste water treatment.

As Mr. Sugarman pointed out, waste water treatment facilities, also play an important role in removing toxics from the Great Lakes.

I think we all understand the need to reduce the Federal deficit, and we in the States support Congress' efforts to do so. However, this assault on the Great Lakes is not caused by a contracting ability to fund the program. Rather it is a redistribution within the program away from protecting the Great Lakes to fund other parts of the Nation.

As a matter of national policy, it seems obvious that it is irrational to move protection away from the place where 95 percent of your fresh surface water is stored. I hope that the Senate will see fit to restore the traditional needs-based formula, which has done so much to help our world class lakes.

Thank you. That concludes my testimony.

Senator **Durenberger**. Thank you.

Mr. Ballantyne.

Mr. **Ballantyne**. Thank you, Senator Durenberger.

My name is Christian Ballantyne. I am the associate midwest representative for the Sierra Club. I am pleased to be here today to present the Sierra Club's views on pending legislation which affects the Great Lakes as it relates to water quality.

We would like to thank you for providing an opportunity to focus attention on this important matter. My remarks today will address the current status of water quality of the Great Lakes and the U.S. Federal role in Great Lakes management, with specific reference to S. 765 and the Clean Water Act.

At the outset, it is important to affirm that in the last two decades, significant progress has been made in cleaning up the Great Lakes; 1975 marked the turning point for the Great Lakes. Congress adopted the Federal Water Pollution Control Act, and the United States and Canada signed their Waste Water Quality Agreement.

Cleaning up conventional pollution was an appropriate priority at that time. In fact, the Great Lakes are an outstanding example of the success of a decade in investment in construction grants program. It also illustrates that cleanup takes a long time to accomplish and the results even longer to realize. We are just now beginning to see clear examples, payoffs, if you will, from the construction of sewage treatment plants and the enforcement of discharge limitations.

With the exception of specific areas of concern and toxic hot spots, which are addressed in my written remarks, it is safe to say that we have accomplished much of the goal of halting the degradation of the Great Lakes from conventional pollution. What remains to be done and it perhaps the greatest challenge, is the restoration and the rehabilitation of the waters in the Great Lakes to a quality set forth in the goals of the 1978 agreement with Canada.

We want the Great Lakes to be healthy again, capable of not only being fishable and swimmable, but capable of sustaining life, capable of supporting a fishery that is safe to eat, and capable of supplying safe drinking water.

That is why it is critical not only to maintain existing commitments to water quality in the region, but to expand our efforts if we are to see true progress in the rehabilitation of the lakes. Now it not the time to pull back on successful programs. Instead, we must strengthen existing efforts, and expand the agenda to cleaning up the Great Lakes, or we will lose today's hard earned profits.

Pollution issues in the Great Lakes are complex, and their solutions are, as well. The multiple agencies and governments involved in Great Lakes management further muddies the waters. We welcome new language in the reauthorization of the Clean Air Act, modeled after Senator Kasten's Great Lakes Management Act. It clarifies some of the Federal management responsibilities in the Great Lakes and establishes in Federal law that the United States will seek to comply with our agreement with Canada. This represents substantial progress in the Federal Government's commitment to restoring Great Lakes water quality and of fulfilling our obligations to our neighbor on the north coast, if you will.

Specifically, the language accomplishes several objectives which we believe will solidify Federal support for Great Lakes protection. Statutorily establishing the Great Lakes National Program Office provides stability for both the Office and its functions. Further, mandating that this Office "Shall develop and implement specific action plans to carry out the responsibilities of the United States under the Great Lakes Water Quality Agreement of 1978" formally recognizes the agreement and our obligation as a nation to comply with it for the first time in U.S. Federal law. This will lend new impetus to the quality of programs designed to respond to the agreement, and we believe it is a significant new expression of commitment to the goals and spirit of the agreement on the part of the United States.

Other provisions of the legislation establish additional positive initiatives. A system-wide water quality surveillance network will provide needed continuity in analyzing the health of the Great Lakes ecosystem and will establish a data base which will help identify system-wide trends and toxic hotspots. A nutrient reduction plan is merited to complete the unfinished agenda to adequately limit the loadings in the lake and in particular is needed in the area of nonpoint sources, where control programs to date have been isolated, largely voluntarily, and thus of limited effect.

A study and demonstration project on the removal of toxics sediments is also merited, and the need is particularly urgent.

The annual report to Congress, which many of us suggest be called The State of the Lake Report will not be just an exercise in creating paper. Compiling such a document will provide the United States with an annual basis of our success in meeting the goals of the Water Quality Agreement. These reports will allow us to measure progress and alert us to lingering problems each year and will also serve as a comprehensive reference on trends in the Great Lakes water quality.

The language now included in the Clean Water Act reauthorization does not contain language in the original bill which specifies Great Lakes research authority. In view of the present administration's consistent policy to eliminate Federal funding for Great Lakes, we feel it is important that the Congress reaffirm the U.S. commitment to Great Lakes protection, and research is a critical component in that plan.

Since 1980, an annual battle has been waged to save the Great Lakes Research Laboratories. In spite of frightening confirmations of wide-spread fish cancer in the lakes, furans and other dioxin-like chemicals being found in the lakes and reoccurring incidents of deformed waterfowl, Federal funding for Great Lakes research remains at or below Carter administration levels.

With insecure funding, long-range research is difficult to plan and even more difficult to carry out.

There is nothing like zero-funding levels to instill morale problems and encourage high turnovers of skilled scientific researchers. It is indeed embarrassing that each fiscal year we must grovel and scratch to secure Federal funding for basic research in the world's most precious fresh water system. This is one area where the private sector cannot be expected to make up the difference.

In view of the experience of the last 4 years, we believe that Congress should provide a statutory mandate for the Federal role in Great Lakes. We encourage you to reconsider the research component of the Kasten bill when the clean water legislation comes to the Senate floor.

Finally, let me say that the laudible new initiatives will only be successful if they receive the appropriations to make them work. Whether we are looking at construction grants, enforcement budgets, study and research funding, or basic office budgets, it all boils down to the fact that it will cost money to save the Great Lakes. Money spent to date has been a good investment. Let us not leave the work unfinished. The Great Lakes will repay us tenfold if we do the job right while the opportunity still exists.

Thank you.

Senator DURENBERGER. Thank you very much.

Dr. McNaught.

Mr. MCNAUGHT. Thank you, Senator Durenberger.

I am Don McNaught, professor of ecology at the University of Minnesota and director of the Minnesota Sea Grant Program. I want to make four brief points from my written testimony.

First, a number of speakers have alluded to the fact that the Great Lakes were once pristine and now polluted. Over 100 years ago, I think that there were neither nutrient nor contaminant problems. First, we were faced with excess nutrients; second, with the contaminant problem, which I think is the more serious of the two.

Second, S. 765 attacks these two major problems of the lakes. It will help with reducing inputs of nutrients to the lakes, and it will help to remove inplace contaminants, the major problems that we have in these Great Lakes ecosystems.

I support S. 765 for these basic reasons and because it attacks the two major problems of the lakes.

Third, in my written testimony, I emphasize that cleanup will be expensive and since it is expensive, I have attempted to show that cleaning up the lakes will lead to economic benefits. Senator Durenberger, in your own State of Minnesota, and in between Minnesota and Senator Kasten's State of Wisconsin, we have the St. Louis Estuary. Previous to 1978, pulp mill waste polluted the St. Louis Estuary. In 1978, a treatment plant was built to handle these wastes. Minnesota sea grant investigators have shown that before cleanup, there was not enough oxygen in the estuary to support a walleye fishery. After cleanup, there was plenty of oxygen.

Minnesota DRN has shown that before cleanup, there were about 1,000 angler trips a year to the estuary; following cleanup, 30,000 angler trips a year to the estuary. These trips were mainly in pursuit of that great Minnesota fish, the walleye. Previous to cleanup, about 1,000 walleyes a year were taken from the estuary; post cleanup, about 30,000 walleyes a year. That cleanup has had economic impact in Minnesota. It has led to about $800,000 a year put into the Duluth economy and probably a like amount into the Wisconsin economy.

As for a second example, and I will be brief, Mr. Martin a minute ago mentioned Lake Erie. The Ohio sea grant has shown that in 1970, the Lake Erie walleye fishery was closed because of mercury problems. In 1975, a water treatment plant was built in Detroit, and the phosphate problem that Mr. Martin alluded to was taken care of. In 1976, the walleye harvest in Lake Erie was 111,000 fish; in 1983, 3 million fish. In 1976, Ohio sea grant counted 34 charter captains on the lake; in 1980, 650. These are economic benefits to cleanup.

In 1981, the Lake Erie walleye fishery on the western end was worth $100 million to the State of Ohio; in 1984, that walleye fishery was worth $125 million. Cleanup brings moneys into our State economies.

In my written testimony, I have given a third example for eastern Lake Ontario that I won't treat in detail now.

Fourth, my last point, I want to stress that while S. 765 calls for creation of a Great Lakes Research Office to conduct research through our sea grant programs, Federal labs, the private sector and so forth, that I would like that language to be a little more specific in mentioning the great talent base that we have in our State and private universities in the Great Lakes drainage basin.

To be very specific, in section 5, the research section, 5-B-1, it refers to Federal, State, tribal, and private organizations. I would like that to read, Federal, State, university, tribal, and private organizations.

I think that while I very strongly support the Kasten bill, I want to see the word "university" in there more often. In conclusion, then, I support S. 765 with these slight disagreements that I have had, and I thank you for this opportunity.

Senator **Durenberger**. Thank you very much.

Dr. Ragotzkie.

Mr. **Ragotzkie**. Thank you, Senator Durenberger.

I am Robert Ragotzkie, director of the University of Wisconsin Sea Grant Program. I am pleased to be able to comment on S. 765, the Great Lakes Management Act of 1985.

My written statement has been submitted, I will summarize orally.

I will be commenting primarily on the research aspects of this bill. I will omit the laudatory comments about the Great Lakes we have heard many times. I would say today the Great Lakes have problems. Their fisheries, for one, which have been subjected to crisis after crisis, first the sea lamphrey, then overfishing, then the overabundant alewife, and then toxics. Let me do this by example.

In the late sixties, first Michigan and then Wisconsin introduced salmon into the Great Lakes in an attempt to control the alewife. The experiment was a success; not only did the salmon control the alewife population, but a world class salmon fishery was created that is worth over a billion dollars a year to the region.

Today, that fishery is maintained almost entirely by stocking by State and provincial agencies, but ultimately, the fishery is dependent on the forage fish like the alewife which was the original object of control.

If the populations of these forage fish were to drop, either through natural fluctuations or by overstocking, the salmon could turn to perch and chubs for their food. Both of these are valuable commercial species. Therefore, it is essential that we keep the stocking in balance with the ability of the lake to support this fishery.

In the Great Lakes Sea Grant Program network, we have a program called the Salmonid Diet Survey, under which all six programs are sampling the stomachs of salmon and trout to see what they are eating. Canadian provinces are also cooperating.

In this way, we are monitoring what these fish are eating, and if they begin to switch to the commercial species, we will know it immediately.

A second thing we have done is develop a mathematical model to simulate the predator-prey relations between these fish. Based on the Diet Surveys and the mathematical models, several agencies of the Great Lakes are now using our results to modify their salmon stocking policies.

Ideally, all eight Great Lakes States and the Province of Ontario should coordinate their stocking policies if the Great Lakes fisheries are to be more effectively managed. We have a billion-dollar industry, and we must take care of it.

Such a situation, a coordinated policy, would have a better chance of occurring if Great Lakes fishery research and monitoring activities were well coordinated and the results exchanged. The start we have made with the Diet Survey shows the way.

Another problem which we have heard a lot about today is the problem of toxics, toxic contaminants. Some of the substances that have entered the lakes are DDT, PCB's, chlordane, dieldrin, and dioxin. As a result, the fish have become contaminated. The Federal Food and Drug Administration has put restrictions on the commercial fishery. The States and province have issued advisories on the sport fisheries.

As a result, both the commercial fishery and the sport fishery are suffering large economic losses. The advisories are based on tests on fish species from each lake, but because too few samples have been taken and because there have been differences in sampling and analysis protocol and even differences in interpretation of the results, the advisories have been the subject of considerable controversy and, we think, needless losses by some of the fishing industry.

We must increase the sampling frequency, we must standardize the testing, and we must exchange the data in a more timely manner if we are to determine the actual level of contaminants in the Great Lakes, if we are to know the human health risks of eating Great Lakes fish, and if we are to know the year-to-year trends in these toxic substances in the lakes themselves.

Clearly, a systemwide coordination of these activities must be improved, and the data exchange opened up if we are to deal with this problem effectively.

Let me give you an example of what happens when coordination does not occur. In the southern end of Green Bay, there is a Forster's term rookery which has been displaying signs of trouble. The eggs are not hatching, or if they hatch, the young are deformed. We suspected dioxin.

In 1984 the Wisconsin Sea Grant Program put together a joint project with scientists from the university, the U.S. Fish and Wildlife Service, and the Wisconsin Department of Natural Resources, and studied the problem.

When we completed the study, dioxin was, indeed, implicated. At the same time, when the news that there was dioxin in Green Bay reached the various Federal and State agencies, within a few months there were 16 separate research groups from 9 different agencies in that bay studying dioxin. There was essentially no coordination among these groups.

Not only does such duplication waste money and time, but it is poor science, and it doesn't lead to good policy. I am sure that each agency was sincere in trying to investigate a potentially serious problem. Yet the movement of dioxin through the water and biota into the birds and possibly into the fish with a potential human health problem was a common problem with common goals, and those 16 groups should have been working together. They would have done better science, we would have had a better policy, we would have gotten a better report out of the study.

Solutions require better coordination than we have achieved up to now, and the establishment of the Great Lakes Research Office within NOAA as called for in section 5 of this bill would help meet this need. By coordinating Federal programs and by working with university Sea Grant Programs, this office could accomplish a great deal in strengthening and focusing Great Lakes research.

Research alone will not solve these problems. The translation of research to management policy must go on. The communication of research results to the public in an understandable form is an essential part of any policy and any management of the lakes.

Let me conclude by saying the university Sea Grant Programs have the mandate and the capability to carry out both these information transfer and public education functions. We are doing this. We are quite well organized in the Great Lakes region, and we would welcome a stronger partnership with a well-coordinated Federal research program.

I am pleased to support Senate bill S. 765. In particular, I welcome the strengthening of Great Lakes research through the establishment of a Great Lakes Research Office.

Thank you very much.

Senator **Durenberger**. Thank you. Thank you, gentlemen.

On the issue of the national resource, the Great Lakes, I take it from your testimony that in part, the protection of a national resource takes some national focus such as we have in administrative offices of one kind or another. It takes an agreement, usually legislatively blessed, to do something about it. It takes, in many cases, information and a commitment to research. And then it takes dollars of some kind and, over time, it strikes me that we have combined all four of those elements to a greater or lesser degree, but never in any kind of a really coordinated sense.

I have never really felt, living at the Western end of the lakes, that I was part of the Great Lakes. I never met anybody from New York that could have associated themselves with Minnesota as easily as Louisiana could, because we were dumping on them every spring.

I wonder if the four of you who have different perspectives on this area can give us for the record, since this is the Intergovernmental Relations Subcommittee and we have jurisdiction on environmental and natural resource organization, if you could give us some guidance on how you think this country ought to approach a national resource that is regional in character.

How do you, for example, get either research or financing or a change in the dumping of a toxic waste or of a phosphorus runoff from a fertilized field? In a country like ours, how do you get New York, Pennsylvania, Ohio, and Michigan together? We have just dumped a big pot of Federal money into a variety of little siphons, but we have now concluded that that is not the best way.

Do you have some notions as to what sort of things we ought to be looking at in the Congress to alleviate that problem? Can we start with you, Chris, since you are the guy with the regional responsibility and the other three people have a State responsibility.

Mr. BALLANTYNE. Certainly. I think the most simple and most direct way to address the needs of the Great Lakes are to enact the provisions of the Kasten bill to do that. It is clear that the Federal Government must play a role, and a very important role, in the Great Lakes management. Individual States cannot be expected to pick up the burden. The governments are not equipped in most cases to do all the research, and that only through strong provisions embodied in the Kasten legislation are we going to be successful.

We have to manage this resource, and we have to look at it as a national resource.

Senator DURENBERGER. Tom.

Mr. MARTIN. Chris makes a good point, and you do, also. It is a regional resource that we all share, and I think that the responsibility has to be shared. I do think that the States have to take some of the responsibility, and I do think that the Federal Government has to have some of the responsibility. As this bill attempts to do, there should be coordination of program efforts and some analytic efforts also, that the Federal Government can play. I know that Peter Wise's office has done a number of things: The recent fish advisory that all the States from around Lake Michigan signed was due in part to the efforts of a national agency coming in and saying, "Let's all get together and talk about this." That is an appropriate role for them to play.

I would like to see a couple of enhancements in the Kasten bill that I think would further improve the way policy gets made. First, I would like to see an explicit provision in there for public participation. I think that can be done easily enough by referencing another section of the Clean Water Act, 101–E. I think that it is necessary to have an express component for research coordination. I am not sure it needs to be quite as lengthy and complex as it is in the original Kasten bill, but I think the ideas contained within that bill for coordination are very important at the Federal level. The Great Lakes are not only a national resource, either, it is an international resource. It is only the Government of the United States that conducts foreign policy.

Senator DURENBERGER. Dr. McNaught.

Mr. MCNAUGHT. I think that is an interesting question from the perspective of the Sea Grant directors. In Sea Grant, we have something we call the Sea Grant Lakes network, and the Great Lakes programs from New York through Ohio, Michigan, Indiana, Illinois, Wisconsin, with Bob Ragotzkie, and Minnesota, work together to coordinate what we are doing researchwise. An example is the salmonid stomach analysis Bob Ragotzkie mentioned in his testimony.

A second coordinating device we have been working on through this year through NOAA is a detailed description of ongoing research handled through the office of Andy Robertson is in, the National Marine Pollution Office or something to that effect. We have been meeting regularly, now. Peter Wise from EPA has attended those meetings and many others that were here today have cooperated in developing a Great Lakes coordination document through NOAA so that we know what each other is doing and have some idea of what needs to be done in the future.

Third, personally, I have been involved with the International Joint Commission, the Science Advisory Board, the Aquatic Ecosystems Objective Committee and so forth, in trying to understand what both the Americans and the Canadians are doing. Many of us, again work through the IJC. That is an important coordinating mechanism.

It is interesting to note that in Minneapolis on June 18, we are having a 30-paper symposium on toxics in the Great Lakes in the American Society of Limnology and Ecological Society meeting jointly. I think those 30 papers will be published in book form.

Thus there are a number of coordinating groups. We have simply got to keep working toward better coordination.

Senator Durenberger. Dr. Ragotzkie.

Mr. Ragotzkie. You asked a question that has been eluding environmentalists for as long as there has been environmentalists. I think communications is one of the first things that has to be accomplished more effectively. You mentioned in Minnesota, you feel no kinship to New York and vice versa. That is certainly true of many of us.

The Great Lakes are a system, and we need to get that message across more and more. Each lake has gone through a lot of the same stages. Superior, perhaps, hasn't gotten there yet, but it might have some of the same problems that Lake Erie has, at least in some of the bays. What we learn from the experiences of one lake we can apply to another. The problems are not unique to a particular lake. They are region-wide. The toxins are coming in not just from rivers and cities, they are coming in from the air, as well, and they are coming into all five Great Lakes.

So the research that we do on one lake is almost always transferable to another lake. We should learn that lesson and use it better.

The Federal laboratories have been mission oriented, and that is because of the way they are organized. They have to be mission oriented, because that is how their budget is allocated. We understand that.

Universities can be more free in how they go about their research, and we all understand that. I think, that we need, somehow, to get over this hang-up that Federal laboratories and university research groups can't cooperate. I think we can, I think we must. We are past this stage where we can each have our own little laboratory and do our own little thing.

I would hope this bill will take a small step, at least, in that direction.

The Federal agencies cannot coordinate university research. We know that. But they can build a climate of cooperation, and universities are prepared to cooperate.

I make a plea that the Federal agencies and the universities work harder at cooperating in a Great Lakes-wide research priority-setting effort. We must do it. The problems are too big for any one of us.

Last, I want to put in a plug for the question of human health. That question comes up again and again about the toxics in the fish. Are they dangerous to humans? We don't know. We have lots of indirect evidence, and we have lots of cancer models and studies on which we base the advisories and so on. I don't denigrate those for a minute.

But we have no basinwide emprical studies on human health effects of living in the Great Lakes region and eating Great Lakes fish. No university group can do this alone; no Federal agency can do it alone; and no State agency can do it alone. That is the problem that is going to take region-wide cooperation and funding.

Until it is done, we are not going to know whether there are real health hazards in the basin due to this toxic contamination. This is a unique problem for the Great Lakes, because of the nature of the aquatic food chain, and we must deal with it.

Well, I could go on, but those are a few examples of how we can protect this.

Senator DURENBERGER. Gentleman, we have a series of questions relative to the impact of water quality and the Water Quality Agreements of various measures taken by the United States over the last 3 or 4 years and are proposed to be taken that we will propound to you in writing in the hopes that you will be as generous of your time with the written questions as you have been in coming here today.

We are very, very grateful to all of you. Thank you very much.

[The prepared statements and responses to written questions of Messrs. Martin (with attachments), Ballantyne (with attachments), McNaught, and Ragotzkie follow:]

TESTIMONY OF THOMAS D. MARTIN

DIRECTOR

MICHIGAN OFFICE OF THE GREAT LAKES

BEFORE

U.S. SENATE SUB-COMMITTEE ON

INTERGOVERNMENTAL RELATIONS

MAY 22, 1985

SUBJECTS: THE GREAT LAKES MANAGEMENT ACT AND
THE WASTEWATER TREATMENT GRANT
ALLOCATION FORMULA

Box 30028
Lansing, Michigan 48933

IT IS A PLEASURE TO HAVE THE OPPORTUNITY TO COMMENT ON THE "GREAT LAKES MANAGEMENT ACT". MY GOVERNOR, JIM BLANCHARD, HAS LONG RECOGNIZED THE NEED FOR COORDINATED MANAGEMENT OF FEDERAL GREAT LAKES PROGRAMS. WHILE HE WAS IN CONGRESS HE INTRODUCED A BILL ENTITLED THE "GREAT LAKES PROTECTION ACT" WHICH EMBODIED MANY OF THE SAME CONCEPTS NOW CONTAINED IN THE MANAGEMENT ACT. HE IS VERY EXCITED THIS ISSUE HAS AGAIN COME TO THE FORE.

RECENTLY MICHIGAN ENVIRONMENTAL AND CONSERVATION LEADERS MET TO DISCUSS THIS BILL AND MY REMARKS WILL REFLECT OUR COLLECTIVE JUDGEMENT.

THE NEED FOR A STRONG FEDERAL ROLE IN SHAPING GREAT LAKES POLICY IS CLEAR. BUT PRESENTLY THE MEANS TO MAKE THESE POLICY DECISIONS IS FRAGMENTED AND MUDDLED.

WE STRONGLY SUPPORT THE CONCEPT OF A LEAD POLICY OFFICE FOR THE LAKES. THE NEED FOR COORDINATED, COMPREHENSIVE POLICY DEVELOPMENT IS CLEAR AND THE EPA GREAT LAKES NATIONAL PROGRAM OFFICE SHOULD BE ABLE TO PROVIDE THIS DIRECTION. OUR EXPERIENCE WITH THE NEW GREAT LAKES OFFICE IN MICHIGAN IS THAT A LEAD OFFICE ENSURES THE MAXIMUM PROTECTION EFFORTS FOR THE LAKES IN OUR STATE. WE WOULD WELCOME HAVING A SINGLE OFFICE TO TURN TO FIRST CONCERNING GREAT LAKES ISSUES. FURTHER IT SEEMS TO ME THAT THE REGIONAL AND INTERNATIONAL NATURE OF THE GREAT LAKES BASIN DEMANDS A SPECIAL FOCUSED APPROACH.

THERE ARE A NUMBER OF COMPONENTS WE BELIEVE ARE NECESSARY FOR THIS CONCEPT TO WORK. FIRST WE ARE PLEASED AT THE EXPLICIT RECOGNITION IN THE BILL OF THE ROLE STATES PLAY IN FORMULATING GREAT LAKES POLICY. WE ALSO ARE PLEASED THAT THE BILL CONTAINS A MANDATE FOR ACTION PLANS, AN ANNUAL REPORT AND RESEARCH. WE DO HOWEVER HAVE SOME CONCERNS.

WE BELIEVE THAT THIS BILL SHOULD CONTAIN A SPECIFIC PROVISION FOR PARTICIPATION BY THE PUBLIC IN THE DEVELOPMENT OF ACTION PLANS, MONITORING AND OTHER PROGRAMS THAT EFFECT OUR REGION. ONLY A BROAD BASED, PUBLIC PROCESS CAN GATHER THE CONCENSUS WE NEED TO ENSURE SUPPORT FOR THE STRONG MEASURES WE MUST TAKE TO PROTECT THE LAKES.

WE ALSO BELIEVE THAT THE MANDATED ANNUAL REPORT SHOULD CHRONICLE THE ACHIEVEMENTS IN MEETING THE OBJECTIVES, GOALS AND POLICIES OF THE CLEAN WATER ACT ITSELF IN ADDITION TO THE WATER QUALITY AGREEMENT. PROGRESS TOWARDS THE "FISHABLE, SWIMABLE" GOALS OF THE CLEAN WATER ACT ARE ALSO IMPORTANT MEASURES OF OUR PROGRESS IN PROTECTING THE LAKES.

WE BELIEVE THAT THE MONITORING SECTIONS OF THE ANNUAL REPORT SHOULD REFLECT A COMPREHENSIVE SURVEILLANCE PROGRAM. THEREFORE WE SUGGEST THE MONITORING SECTIONS EXPLICITLY OUTLINE THE SURVEILLANCE PROGRAMS ON AIR TRANSPORT, GROUNDWATER, SEDIMENTS, TRIBUTARIES, FISH AND THE GREAT LAKES SURFACE WATER ITSELF.

WE BELIEVE THAT THE ANNUAL REPORT SHOULD SHOW HOW THE ACHIEVEMENTS DESCRIBED WITHIN IT SPECIFICALLY CONTRIBUTE TO THE IMPROVED CONDITION OF THE GREAT LAKES SYSTEM.

FINALLY WE BELIEVE THAT THE LANGUAGE CONCERNING GREAT LAKES RESEARCH IN THE BILL MUST BE REDUCED TO CLEAR AND CONCISE PROSE. WE SHARE THE BELIEF THAT THIS RESEARCH IS VITAL TO A PROPER STEWARDSHIP OF THE LAKES AND THAT COORDINATION IS ESSENTIAL TO MAXIMIZING THESE EFFORTS. THIS GOAL CAN BE ACHIEVED MERELY BY MANDATING A RESEARCH PLANNING COUNCIL OF THE KEY FEDERAL AND STATE RESEARCH INSTITUTIONS. THE ANNUAL REPORT SHOULD THEN HIGHLIGHT THEIR PAST ACHIEVEMENTS, FUTURE PLANS AND THE IMPACT OF THIS RESEARCH ON POLICY DECISIONS. THIS WILL ACHIEVE THE OBJECTIVES OF THE PRESENT RESEARCH PROVISIONS WHILE REMOVING ITS OFTEN CONFUSING LANGUAGE. IN SAME WE SUPPORT THE ACT WITH THE ENHANCEMENTS OUTLINED ABOVE.

THERE IS ANOTHER IMPORTANT ISSUE FACING THE GREAT LAKES TODAY. WE WERE VERY DISTRESSED TO LEARN THAT THE ENVIRONMENT AND PUBLIC WORKS COMMITTEE HAS ALTERED THE TRADITIONAL NEEDS BASED FORMULA UPON WHICH WASTEWATER TREATMENT GRANTS WERE ALLOCATED TO THE STATE. THE NET EFFECT OF THIS ALTERATION IS TO MOVE RESOURCES

AWAY FROM THE GREAT LAKES - WHERE 95% OF OUR NATIONS FRESH SURFACE IS STORED.

THE GREAT LAKES AREN'T JUST ANOTHER BODY OF WATER. THEY HAVE NO EQUAL ANYWHERE IN THE WORLD. LAKE SUPERIOR HAS THE LARGEST AMOUNT OF SURFACE WATER OF ANY FRESHWATER LAKE IN THE WORLD. LAKE HURON IS FIFTH, MICHIGAN SIXTH, AND ERIE ELEVENTH. ONE IN TEN AMERICANS GET THEIR DRINKING WATER FROM THESE LAKES. MILLIONS EAT FISH CAUGHT IN THESE WATERS. MILLIONS MORE SWIM IN THE GREAT LAKES. AND STILL MORE AMERICANS SPEND TIME ON THE LAKES IN THEIR BOATS. MUCH OF OUR NATIONS INDUSTRY AND AGRICULTURE DEPEND UPON THESE WATERS. IN SHORT THE GREAT LAKES BASIN SERVES OUR COUNTRY IN MANY VITAL WAYS - WAYS THAT DEPEND ON CLEAN WATER.

IN ADDITION WE HAVE EXPLICIT WASTEWATER TREATMENT RESPONSIBILITIES TO CANADA UNDER THE WATER QUALITY AGREEMENT OF 1978. ARTICLE VI SETS OUT CLEAR REQUIREMENTS FOR OUR NATION TO FULFILL INCLUDING THE "PROVISION OF FINANCIAL RESOURCES TO ENSURE PROMPT CONSTRUCITON OF NEEDED FACILITIES". PLEASE NOTE THAT WE MISSED THE 1982 DEADLINE IN THE AGREEMENT FOR SOME FACILITIES. ANNEX 3 OF THE AGREEMENT ALSO CALLS FOR THE CONTROL OF PHOSPHORUS AND OTHER NUTRIENTS - A KEY FUNCTION OF WASTEWATER TREATMENT PROGRAMS.

MAKE NO MISTAKE ABOUT IT THE NEW ALLOCATION FORMULA WILL HURT EFFORTS FOR CLEAN GREAT LAKES WATER. USING MICHIGAN THE ONLY STATE WHOLLY WITHIN THE GREAT LAKES DRAINAGE BASIN AS AN EXAMPLE THE EFFECTS OF THIS PROPOSAL BECOME CLEAR. WE HAVE IDENTIFIED 16 COMMUNITIES THAT MUST UPGRADE TO SECONDARY TREATMENT FACILITIES BY JULY OF 1988 UNDER THE PROVISIONS OF THE CLEAN WATER ACT. ANOTHER 35 SITES ARE UNDER ORDER OR A PERMIT SCHEDULE TO UPGRADE THEIR FACILITIES. AND 36 OTHER PROJECTS HAVE BEEN IDENTIFIED AS HAVING A PUBLIC HEALTH PROBLEM.

ATTACHED TO MY TESTIMONY IS A LIST OF PROJECTS THAT WILL BE FUNDED UNDER THE OLD FORMULA VERSUS THE SITES THAT WILL BE FOUNDED UNDER THE PROPOSED FORMULA. THE MESSAGE IS CLEAR, UNDER THE NEW PROPOSED FORMULA SITES THAT DUMP RAW SEWAGE INTO THE GREAT LAKES BASIN MUST WAIT TO HAVE PROPER FACILITIES INSTALLED.

THE FACT IS THAT WASTEWATER TREATMENT FACILITIES, BUILT AS A RESULT OF THE GRANT PROGRAM, HAVE MADE THE GREAT LAKES CLEANER. JUST YESTERDAY OUR ADMINISTRATOR OF THIS PROGRAM WAS TELLING ME, WITH A LOOK OF WONDER AND PRIDE ON HIS FACE, THAT THIS SUMMER WE WILL BRING THE LAST TWO MAJOR TREATMENT FACILITIES ON LINE ALONG THE KALAMAZOO RIVER. TOM TELLS ME THAT THIS RIVER, WHICH FLOWS INTO LAKE MICHIGAN, WILL ONCE AGAIN BECOME A BASS FISHING PARADISE.

THESE FACILITIES HAVE ALSO DONE MUCH TO REMOVE LAKE ERIE FROM THE DEATHWATCH LIST OF THE 1970'S. LAKE ERIE WAS HEAVILY POLLUTED WITH NUTRIENTS AND THE TREATMENT PLANTS BUILT UNDER THIS PROGRAM HAVE DONE MUCH TO CONTROL POLLUTANTS LIKE PHOSPHORUS.

IN MICHIGAN WE ALSO SEE A DRAMATIC DECREASE IN PHOSPHORUS LOADINGS OF SAGINAW BAY DUE IN LARGE PART TO WASTEWATER TREATMENT PROGRAMS. ADDITIONALLY, MY EXPERTS TELL ME THIS PROCESS ALSO REMOVES SOME TOXICS FROM THE WASTEWATER. THE FACT IS THE WASTEWATER TREATMENT PROGRAM WORKS.

WE ALL UNDERSTAND THE NEED TO REDUCE THE FEDERAL DEFICIT AND WE SUPPORT CONGRESSIONAL EFFORTS TO DO SO. HOWEVER, THIS ASSAULT ON GREAT LAKES STATES IS NOT CAUSED BY A CONTRACTING ABILITY TO FUND THE TREATMENT PROGRAM. IT IS MERELY AN ILL-CONSIDERED ATTEMPT TO MOVE RESOURCES AWAY FROM PROTECTING THE GREAT LAKES TO OTHER PARTS OF THE COUNTRY. AS A MATTER OF NATIONAL POLICY IT SEEMS OBVIOUS THAT IT IS IRRATIONAL TO REMOVE PROTECTION RESOURCES FROM 95% OF OUR NATION'S FRESH SURFACE WATER. I HOPE THAT THE SENATE WILL SEE FIT TO RESTORE THE TRADITIONAL NEEDS BASED FORMULA WHICH HAS DONE SO MUCH TO HELP OUR WORLD CLASS LAKES.

THE GREAT LAKES ARE A UNIQUE RESOURCE. THEY ARE UNIQUE TO OUR NATION, UNIQUE TO THE WORLD. CONGRESS HAS TWO OPPORTUNITIES TO RECOGNIZE THE WORTH OF THE LAKES TO OUR NATION. I PRAY YOU WILL SEIZE THEM.

MICHIGAN AMENDMENTS TO GREAT LAKES PORTION OF CLEAN WATER ACT
SUGGESTED BY THOMAS D. MARTIN, DIRECTOR
MICHIGAN OFFICE OF THE GREAT LAKES

Sec. 3

(a)(1) In cooperation with appropriate Federal, State, tribal and international agencies, develop and implement specific action plans using the procedures outlined in Section 101(e) of this Act, to meet the purposes, policies, general objectives and specific objectives of the Great Lakes Water Quality Agreement of 1978.

(e)(1) describes the achievements in the preceding fiscal year in implementing the Water Quality Agreement of 1978 and meeting the objectives, goals and policies of this Act; and shows by categories (including judicial enforcement, research, State cooperative efforts, and general administration) initiatives in such preceding fiscal year.

(2) describes the progress made in such preceding fiscal year in implementing the system of surveillance of the water quality in the Great Lakes system including the monitoring of groundwater, air transport, sediment tributaries, the Great Lakes and connecting channels, with particular reference to toxic pollutants.

(3) describe how such achievements described in (e)(1) contribute to the improved condition of the Great Lakes system.

(4) provides a comprehensive assessment of the planned efforts to be pursued in the succeeding fiscal year for implementing the Great Lakes Water Quality Agreement of 1978 and meeting the objectives, goals and policies of this Act. The assessment shall show by categories the amount anticipated to be expended on Great Lakes water quality initiatives in the fiscal year to which the assessment relates. The assessment shall also include a report of current programs administered by other Federal agencies which make available resources to the Great Lakes management efforts.

(5) describes the water quality research projects in the Great Lakes system including but not limited to projects performed by States, the U.S. Fish and Wildlife Service, the Environmental Protection Agency Large Lake Research Facilities, Sea Grant Programs, and the Great Lakes Environmental Research Laboratory. The report shall also describe how these projects were part of a coordinated research plan and what the research plan is for the upcoming year.

May 16, 1985

POTENTIAL FUNDABLE PROJECTS
STATE OF MICHIGAN

ALLOTMENT AMOUNT	$105M	$84M
AVAILABLE AFTER SET ASIDES	$81M MUNICIPALITY	$64M MUNICIPALITY
FISCAL YEAR 1986	Wayne Co.-Flat Rock Interceptor Wayne Co.-Van Horn Interceptor Detroit-PC-616 Detroit-SFE Pumps Detroit-PC-446 Detroit-Piping Modifications Wayne Co.-N. Huron V. Seg. 2 Wayne Co.-N. Huron V. Seg. 3	Wayne Co._Flat Rock Interceptor Wayne Co.-Van Horn Interceptor Detroit-PC-516 Detroit-SFE Pumps Detroit-PC-446 Detroit-Piping Modifications Wayne Co.-N. Huron V. Seg. 2 Wayne Co.-N. Huron V. Seg. 3 (Partial)
FISCAL YEAR 1987	Genesee Co.-Interceptor Mt. Clemens Wixom Almont N. Houghton Co.-Calumet/Laurium Imlay City East Lansing Wayne Co.-Rouge Valley St. Ignace New Haven Adams Twp.-S. Range Detroit	Wayne Co.-N. Huron V. Seg. 3 (Partial) Detroit Genesee Co.-Interceptor Mt. Clemens
FISCAL YEAR 1988	Detroit Harbor Beach Muskegon Co. Metro Expansion Chelsea Milford Sparta East Tawas Marlette Oakland Co.-Evergreen/Farmington Seg. 1 Oakland Co.-Evergreen/Farmington Seg. 2 Williamston Lansing-Red Cedar	Wixom Almont N. Houghton Co.-Calumet/Laurium Imlay City Imlay City East Lansing Wayne Co.-Rouge Valley St. Ignace New Haven Adams Twp.-S. Range Detroit Muskegon Co. Metro Expansion (Partial)

$105M	ALLOTMENT AMOUNT	$84M
$81M MUNICIPALITY	AVAILABLE AFTER SET ASIDES	$64M MUNICIPALITY
FISCAL YEAR 1989		
Detroit		Muskegon Co. Metro Expansion (Partial)
Saginaw Twp.		Detroit
Monroe Co.-Luna Pier		Chelsea
Clark Twp.		Milford
Cass County-Cassopolis		Sparta
Cass County-Diamond Lake		East Tawas
Otsego Co.-Otsego Lake		Marlette
Blissfield		Oakland Co.-Evergreen/Farmington S
Manchester		Oakland Co.-Evergreen/Farmington S
Lowell		
Onekama Twp.		
Tawas City		
Leslie		
Otsego		
Dundee		
Greenland Twp.		
Clifford		
Oscoda Twp.		
Evart		
Saginaw Co.-Richland Twp.		
Monroe Co.-Ida/Raisinville Twp.		
Baraga		
Newaygo		
Genesee Co.-Goodrich/Atlas		
Stephenson		
Genesee Co.-Fenton		
Menominee		
FISCAL YEAR 1990		
Detroit		Detroit
Wayne Co.-Fox Creek Enclosure		Williamston
Monroe Co.-Central Erie Twp.		Lansing-Red Cedar
New Era		Saginaw Twp.
Allouez Twp.-Ahmeek		Monroe Co.-Luna Pier
Wayne Co.-Rouge-Down River		Clark Twp.
Grandville		Cass Co.-Cassopolis
Manistee		Cass Co.-Diamond Lake
Bingham Twp.		Otsego Co.-Otsego Lake
Manistique		Blissfield
Frankfort		Manchester
Clare		Lowell
Wayne Co.-Wyandotte Upgrade		Onekama Twp.
Jamestown Twp.		Tawas City
Marquette Twp.		
Midland		
Dearborn		

An additional 12 projects would be eligible for funding from the Rural-Small Community Set Aside during the next five years. They include:

Genoa Twp.-Lake Chemung Area
Stanton
Copper City
Pittsford Twp.
Calumet Twp.-Kearsarge
Osceola Twp.-Dollar Bay
Masonville Twp.
Leoni Twp.
Grayling
Lakeview
Manton
Mesick

MDNR/CA/BLeyrer

RESPONSES OF MR. MARTIN TO WRITTEN QUESTIONS

Question 1. What impediments do we face in reaching the Clean Water Act's goals of fishable, swimmable water for the Great Lakes?

Answer. A number of impediments remain to achieving the fishable, swimmable goals of the Clean Water Act. These include:

(a) The lack of a comprehensive coordinated monitoring system of the Great Lakes, their tributaries, bottom sediments, air transport, fish and other biota, and groundwater. We need a better data base to make policy decisions.

(b) There are a number of wastewater treatment facilities that remain to be built. Secondary and tertiary treatment is also needed in many places.

(c) A strong Great Lakes basin pretreatment program.

(d) An explicit toxics strategy, including controls on outflows.

(e) The lack of a strong anti-backsliding mandate from the Federal Government.

(f) Commitment of resources to IJC areas of concern.

(g) A strong basin wide non-point source pollution reduction strategy.

(h) Research to help us understand the additive and interactive effects of toxic pollutants.

Question 2. Has the United States improved their performance under the Water Quality Agreements since the 1982 GAO report?

Answer. The United States has improved its performance since the 1982 report but cuts in the wastewater treatment program would be a significant step backward.

Question 3. What remains to be done?

Answer. The things that remain to be done are to implement the programs that would lower the impediments listed in number 1.

Question 4. What are the costs?

Answer. The costs of this effort are immense and are best measured on a program by program basis.

Question 5. Who has the responsibility to meet these goals?

Answer. The primary responsibility for meeting the goals of the Water Quality Agreement are the Federal Government's—they are the signatory. Any shared responsibility with the states should be explicitly negotiated at the Federal Government's request.

STATEMENT OF CHRISTIAN BALLANTYNE
REPRESENTING THE SIERRA CLUB
BEFORE THE SENATE SUBCOMMITTEE ON INTERGOVERNMENTAL AFFAIRS
REGARDING THE GREAT LAKES

MAY 22, 1985

Senator Durenberger and members of the Committee, I am Chris Ballantyne, Associate Midwest Representative for the Sierra Club. I am pleased to be here today to present the Sierra Club's views on pending legislation which affects Great Lakes water quality.

We would like to thank Senator Durenberger, and other Senators from the Great Lakes states for providing an opportunity to focus attention on this imporant matter. My remarks today will address the current status of water quality in the Great Lakes, and the U.S. federal role in Great Lakes management with specific reference to S.765 and the Clean Water Act.

I am certain that many other witnesses will speak to the significance of the Great Lakes as a natural resource of global significance, but it bears repeating that fully one-fifth of the world's fresh water is in the Great Lakes basin and millions of people depend on the Great Lakes for drinking water. In addition, the lakes provide transportation routes for commodities, countless opportunities for recreation, hydro-power generation, and both a commercial and sports fishing industry. For too many years this bountiful resource was taken for granted-- used, but not cared for. When conditions in Lake Erie degraded to a point in the nineteen sixties where the decay of algae and the depletion of oxygen in the lake lead some to declare the lake "dead", the United States and Canada at last began to undertake serious efforts to control pollution in the lakes and restore water quality.

It is important to affirm that in the last two decades significant progress has been made in cleaning up the Great Lakes. 1972 marked a critical turning point for the Lakes. Congress adopted the Federal Water Pollution Control Act, and the United States and Canada signed their first Water Quality Agreement.

Both of these initiatives dealt with basic, urgent needs in pollution control --control of direct discharges into waterways, sewage treatment, and in the case of the Water Quality Agreement, limiting the amount of phosphorous entering the Great Lakes.

Cleaning up conventional pollution was an appropriate priority at the time. In fact, the Great Lakes system is an outstanding example of the success of a decade of investment in the construction grants program. It also illustrates that clean-up takes a long time to accomplish, and the results even longer to realize. We are just now beginning to see clear examples, --payoffs, if you will, from the construction of sewage treatment plants and the enforcement of discharge limitations.

Lake Erie is alive again, and the massive algae blooms are a thing of the past. Once-closed beaches are open again, and fish have returned to tributaries and bays that at one-time appeared hopeless. While the clean-up job is not complete, we know, at least in terms of conventional pollution, that it is working, and it has been a sound investment.

With the exception of specific areas of concern and toxic hot-spots, (which I will address later) it is safe to say that we have accomplished much of the goal of halting the degredation of the reat Lakes from conventional pollution. What remains to be done, and is perhaps the greater challenge, is the restoration and rehabilitation of the waters of the Great Lakes to a quality set forth in the goals of the 1978 Agreement with Canada. We want the Great Lakes to be healthy again, capable of not only being "fish-able and swimable" but capable of sustaining life, capable of supporting a fishery that is safe to eat, capable of supplying safe drinking water. That is why it is critical not only to maintain existing commitments to water quality in the region, but to expand our efforts if we are to see true progress in the rehabilitation of the Lakes. Now is not the time to pull back on successful programs. Instead, we must strengthen existing efforts and expand the agenda in cleaning up the Great Lakes, or we will lose today's hard-earned progress.

In spite of the overall success of conventional pollution control in the basin, the upcoming 1984 International Joint Commission Water Quality Board Report indicates that out of the 285 United States' publicly owned treatment works in the Great Lakes basin 170 plants did not meet one or more final effluent requirements. Clearly we cannot afford to reduce efforts now.

In 1977 the Clean Water Act was amended and in 1978 we entered into a new Water Quality Agreement with Canada. The pollution control agenda was expanded to address toxic substances. I wish that I could report that our progress on toxic substances has been as successful as that on conventional pollution, but that is far from the case.

Toxic substances in the Great Lakes system pose the single greatest threat to the future of the Great Lakes. Unlike conventional pollutants, there is no easily controlled source, no simple treatment method. There are over 900 identified toxic substances found in the Great Lakes system. Some of them are well-studied and monitored, others show up in mysterious places with unknown effects. What we do know about toxics in the Great Lakes is indeed alarming.

Health advisories from every Great Lakes state and Ontario warn us not to eat many species of fish found in the Lakes. PCB's are the primary culprit, but other bioaccumulative toxics are mentioned in advisories as well. The bioaccumultive toxics --those that do not break down and thus concentrate in living tissue are a major concern. Many of these substances have been in the lakes for years, typically found in highly contaminated bottom sediments near populated bays and harbors. Once they become part of the food chain, eliminating them from the lake ecosystem is nearly impossible.

Bioaccumulation is not the only threat toxics pose in the lakes. Some substances produce toxic and/or carcinogenic affects simply from repeated direct exposure. The incidence of cancer in fish in the Great Lakes system is beyond alarming. The suspected culprits in fish cancers are polynucleararomatic hydrocarbons, or PAH's --byproducts from steel industry "coking" processes still found in sediments even in areas where the industries have shut down.

I will refrain at this point from elaborating further on the impacts of toxics on the Great Lakes fishery. I have attached as an appendix to my testimony an article from the March/April 1985 issue of SIERRA magazine entitled "A Fine Kettle of Fish", which discusses toxics and the Great Lakes fishery in detail. Suffice it to say at this point, that the fish are telling us that the Great Lakes are still in trouble, and tackling this next phase of pollution will be more complex, more expensive, and more urgent than our previous strides in conventional pollution.

The toxic problem can be crudely broken down into several categories:

1) dealing with what is already there, 2) cleaning up and regulating known existing sources, 3) identifying unknown sources and developing a control program, and 4) concurrently determining what these materials are doing to human health and the environment. None of these steps is simple.

Let's look at dealing with what we know already exists. Removing contaminated sediments poses numerous problems. The question as to whether there is any "safe" removal method is still debated, as is whether it is "safe" to continue to leave those materials where they are. Moreover, what do we do with the contaminated material once it has been removed? Finally, who pays for whatever expensive process is finally approved?

I am sure that the Senators are aware of the "Superfund" program. By and large, underwater toxic sites are not eligible for superfund clean-up money. As we already know, landfill clean-ups are both expensive and time consuming. Imagine the complications of a similar clean-up under hundreds of feet of water? There are no quick solutions to these underwater hot-spots, and the matter deserves the urgent attention of Congress and the states.

These contaminants in the sediments have come from a variety of sources --unchecked industrial discharge into lakes and streams, inadequate municipal treatment, and numerous "non-point" sources.

Let's now look at my second point--what do we do about uncontrolled or inadequately controlled existing sources of toxics. First, it is absolutely essential that all existing toxic control programs be maintained. The Senate Environment and Public Works Committee is to be commended for maintaining the pre-treatment program in its reported version of the Clean Water Act. Pre-treatment keeps toxics out of the ambient environment, which should be the goal of any toxic control program. We must also look for opportunities to expand toxic substances controls in state water quality programs, and maintain a firm anti-backsliding approach to enforcement.

Non-point sources of toxic pollution must be identified and regulated. Many known sources of toxic materials have little or no regulation; for example, evaporate from sewage treatment plants, leachate and evaporate from landfills and industrial sites, farm chemical runoff and long-range airborne depostion, to name some key sources.

Airborne toxics fall into the third category --that is toxics we have little control over, and limited knowledge as to their source. PCB's have been found in the inland lakes of Isle Royale, and exotic pesticides have been found throughout the lakes. While the Great Lakes because of their size, have some capacity to buffer acid rain, they are more vulnerable to toxic rain. Airborne toxics are the major source of toxic substances in the upper Great Lakes. We need studies to determine what is happening, where this stuff is coming from, and what we can do about it. We also need stronger regulation of known toxic air pollution.

The Great Lakes, acting as a huge sink in the North American continent have served as a model and predictor for environmental problems throughout the biosphere. The DDT phenomenon was first recognized in the Great Lakes basin, and there are numerous other examples of "it happened first in the Great Lakes". The toxic rain problem is likely another warning and we should heed it.

Pollution issues in the Great Lakes are complex, and their solutions are as well. The multiple agencies and governments involved in Great Lakes management further muddies the waters. We welcome the new language in the Clean Water Act, modeled after Senator Kasten's Great Lakes Management Act. It clarifies some of the federal management responsibilities in the Great Lakes and establishes in federal law that the United States will seek to comply with our agreement with Canada. This represents substantial progress in the Federal Government's commitment to restoring Great Lakes water quality and to fulfilling our obligations to our neighbor on the north coast.

Specifically, the language accomplishes several objectives which we believe will solidify federal support for Great Lakes protection. Statutorially establishing the Great Lakes National Program Office provides stability for both the office and its functions. Further, mandating that this office "shall develop and implement specific action plans to carry out the responsibilities of the United States under the Great Lakes Water Quality Agreement of 1978" formally recognizes the agreement and our obligations as a nation to comply with it for the first time in U.S. federal law. This will lend new impetus and authority to programs designed to respond to the Agreement and we believe it is a significant new expression of commitment to the goals and spirit of the Agreement on the part of the United States.

Other provisions of the legislation establish additional positive initiatives. A systemwide water quality surveillance network will provide needed continuity in analyzing the health of the Great Lakes ecosystem, and will establish a data base which will help identify systemwide trends and toxic hotspots.

A nutrient reduction plan is merited to complete the unfinished agenda for adequately controlling nutrient loadings in the lakes, and particular attention is needed in the area of nonpoint sources, where control programs to date have been isolated, largely voluntary and thus of limited effect.

A study and demonstration project on removal of toxic sediments is also merited, and the need is particularly urgent, as I have expressed earlier in my remarks.

The annual report to Congress, which many of us have suggested be called the 'State of the Lakes Report" will not just be an exercise in creating paper. Compiling such a document will provide the United

States with an annual assesment of our success in meeting the goals of the Water Quality Agreement. These reports will allow us to measure progress and alert us to lingering problems each year, and will also serve as a comprehensive reference on trends in Great Lakes water quality.

The langauge now included in the Clean Water Act does not contain the langauge in the original bill which specifies Great Lakes research authority. In view of the present administration's consistant policy to eliminate federal funding for Great Lakes research, we feel it is important that the Congress re-affirm the United State's commitment to Great Lakes protection, and research is a critical component in any plan to rehabilitate the Great Lakes.

Since 1980 an annual battle has been waged to save the Great Lakes Research Laboratories. In spite of frightening confirmations of widespread fish cancer in the lakes, furans and other dioxin-like chemicals being found in the lakes, re-occurring incidents of deformed waterfowl in contaminated parts of the lake, federal funding for Great Lakes research remains at and below Carter administration levels.

With insecure funding, long range research is difficult to plan and more difficult to carry out. There is nothing like zero funding levels to instill morale problems and encourage high turnover of skilled scientific researchers. It is indeed embarrasing that each fiscal year we must grovel and scratch to secure federal funding for basic research in the world's most precious fresh water system. This is one area where the private sector will not make up the difference.

In view of the experience of the last four years, we believe that Congress should provide a statutory mandate for the federal role in Great Lakes research. We encourage you to reconsider the research component of the Kasten language when the Clean Water Act comes to the floor.

Finally, let me say that the laudable new initiatives will only be successful if they receive the appropriations to make them work. Whether we are looking at construction grants, enforcement budgets, study and research funding, or basic office budgets, it all boils down to the fact that it will cost money to save the Great Lakes. Money spent to date has been a good investment. Let us not leave the work unfinished. The Great Lakes will repay us ten-fold if we do the job right while the opportunity still exists.

Thank you.

POLITICS JANE ELDER & MARGE REWALD WETZEL

A Fine Kettle of Fish

To everyone's surprise–and the delight of anglers–the Great Lakes fishery has staged a major comeback, only to be threatened again by a host of chemical toxins.

GAZING ACROSS northern Lake Michigan on a crisp autumn day, one can think of nothing that looks more blue, more wild and pristine than the water. A fresh breeze sends ripples across the lake, and gentle waves wash over the fine white sand and polished pebbles on the shore. If the fish are biting, you may, if you're lucky, pull a flashing trophy-size beauty from the depths of the lake. What this idyllic scene may not reveal to the senses is that your fish is likely to be unsafe to eat.

Something is terribly wrong in Lake Michigan and the other Great Lakes. Fishing licenses now come with lists of fish one should not eat. Fish-eating birds are hatching with deformed bills, and cancerous tumors are being found in fish at alarming rates. The problem is toxics, and the problem seems to be getting worse.

Not too many years ago Lake Erie was reported dead, but thanks to cleanup programs initiated in the United States and Canada, today it is again teeming with fish. Legislation and subsequent enforcement programs helped clean up raw sewage, limited direct industrial discharges into the lakes and tributaries, and controlled loadings of phosphorus, the nutrient responsible for massive algae blooms. Lake Erie, being the shallowest and fastest-flowing of the Great Lakes and the one most easily flushed of old pollutants, made what appeared to be a quick recovery. The waters of the other Great Lakes improved as well.

Yet these early pollution-control measures were mostly limited to regulating direct discharge of the visible, smelly, so-called conventional pollution. Meanwhile, the deadly substances we can neither see nor smell continued to be loaded into the Great Lakes—sometimes in trace amounts, sometimes by the ton.

Home to some 50 million people, the Great Lakes/St. Lawrence River drainage basin reaches from the heart of the industrial Midwest to eastern Quebec. This basin acts as a huge sink in the middle of the continent, and pollutants that have been discarded elsewhere eventually collect and concentrate in the lakes. Toxics enter the system through several avenues: direct disposal of toxic materials into tributaries and into the Great Lakes; "nonpoint" pollution, which includes agricultural and urban runoff, "toxic fallout" from atmospheric deposition, and suspected leachate from hazardous waste sites; and resuspension of contaminants already present in lake sediments from harbor and channel dredging.

© [illegible]

One of the many anglers who fish Lake Michigan's PCB-contaminated waters, seen here documenting his luck. If he wants to stay lucky, he won't eat that salmon.

The presence of toxics in the Great Lakes first gained some notoriety in the late 1960s, when fish contaminated with the pesticide DDT were linked to the decline in the population of fish-eating birds in the region. These birds, among them the peregrine falcon, proved unable to produce eggs strong enough to survive. Study of the effects of DDT revealed a phenomenon now known as bioaccumulation.

Simply put, bioaccumulation is the concentration of a persistent substance in an animal's tissues. Like many other substances, DDT does not break down rapidly, and thus builds up in living tissue. While exposure to DDT may not be significantly harmful in itself, the accumulation of this chemical in fish, particularly in their fatty tissues, may reach alarming levels. In the Great Lakes, the large predator fish at the top of the food chain tend to have the highest concentrations of chemicals in their tissues from feeding on many smaller contaminated fish, who in turn feed on smaller contaminated organisms down to the tiniest microorganisms. Since the banning of DDT in 1971 a slow decline has been noticed in measurable amounts of the pesticide in fish samples, but even some 13 years after the ban DDT is still widespread in the environment.

Moreover, DDT proved not to be unique: We now know that there are hundreds of other toxic substances that accumulate in living tissues. Several are of immediate concern in the Great Lakes. The best known of these are polychlorinated biphenyls (PCBs), probably the most widespread chemical contaminant known to humanity. Problems with PCB contamination have served to illustrate the complexity of dealing with toxics in a system as vast as the Great Lakes.

First manufactured in 1926, PCBs had dozens of industrial applications. They were used in transformers, as high-temperature lubricants, in carbonless paper, and in numerous other processes. Substantial levels of the chemical were measured in Great Lakes fish samples during testing for DDT in 1971. After years of entering the environment through leakage, industrial discharge, incineration, and suspected vaporization from landfills, the persistence of PCB pollution began to receive some notice. Although now widely dispersed, PCBs are concentrated in "hot spots" such as Waukegan Harbor, Ill., the dumping site of the Outboard Marine Corporation; Lake Michigan's Green Bay, the recipient of wastes carried down the Fox River from Wisconsin's "paper valley"; the Niagara River; and several other sites throughout the region.

PCBs were designed to be "robust." Nonbiodegradable and highly resistant to heat, they persist in the environment. The EPA estimates that 91 percent of all Americans have detectable levels of PCBs in their fatty tissues. Although manufacture of PCBs has now been halted, and most uses are highly restricted or being phased out, progress on reducing the chemical's presence in fish has been very slow.

The extent of PCB pollution in the lakes is a classic example of bioaccumulation and the threat contaminants pose in an ecosystem. It has been estimated that a human being would have to drink Great Lakes water for a thousand years in order to consume the amount of PCBs in a one-pound serving of fish contaminated at a level of two parts per million (the level at which the Food and Drug Administration advises against eating fish). In fact, the "fatty" fish in the Great Lakes—native lake trout and the introduced coho and chinook salmon—are not only the most desirable commercial and sport species and among those most likely to be eaten by humans, they are also predators at the top of the food chain, and thus carry the heaviest concentrations of PCBs and other toxics in their tissues. Both the commercial and sports interests of the Great Lakes fishery have been hurt by findings of PCB contamination.

Commercial harvest of lake trout was at one time the bread and butter of the Great Lakes fishery, but it is now banned in all the Great Lakes except Superior. Because the commercial fishery is regulated by the FDA and state agencies, which can prohibit inter- and intrastate sales respectively when contaminant levels exceed "safe" limits, it operates under the continuing uncertainty of its catch being declared unsafe, and its livelihood made untenable.

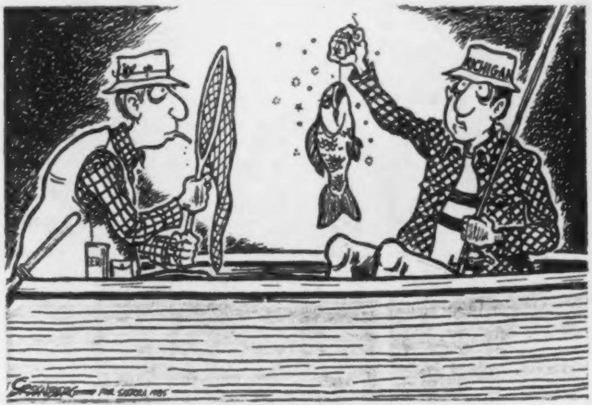
After the demise of the lake trout (now artificially stocked to maintain the population), the controversial introduction of salmon into the Great Lakes was hailed by many as the salvation of the Great Lakes fishery. Management of the fishery shifted from commercial to salmon sport fishing, and if charter businesses and license sales are any indication, the experiment has grown into a financial success.

The Great Lakes salmon fishery is now big business. Except for a few isolated cases, mature salmon are unable to reproduce successfully, and stocking costs run into the millions of dollars every year. But because salmon grow much faster than lake trout, an angler can haul out a hefty, fighting salmon that is considerably larger than a lake trout three times as old. It isn't surprising that the states want the salmon fishing industry to thrive; the popularity of the program generates tax and license dollars. In fact, it is difficult to find a tourist brochure that explains that fish caught in the lakes may be contaminated. To the contrary, Michigan sends out a 72-page color brochure that extolls the wonders of "our country's greatest fishing waters" without once mentioning anything about PCBs.

The commercial fishery has complained that it is singled out as the culprit for supplying tainted fish while the less-regulated sport fishery may actually pose more serious threats to human health. Whereas numerous agencies have the authority to decide which fish appear in supermarket food cases, the individual fisherman must decide whether today's catch is safe to eat.

One of the problems is that so little is known about the long-term effects of PCB exposure on human health, for research data has been scarce. A tragic case of cooking-oil contamination in Japan and studies on primates indicate that short-term, high-level exposure to PCBs can cause loss of hair, neurological damage, skin rashes, and birth defects. When the results of a study on the effects of PCBs on human health were published in the *Journal of Developmental Psychology* last spring, the story produced headlines in papers throughout the Great Lakes region. This was the first study to find "subtle, worrisome signs of problems in behavioral development" in the children of women exposed to low levels of PCBs. The study compared the infants of 71 women who reported eating no contaminated fish with those of 242 women who reported eating an average of two to three meals per month of fish contaminated with PCBs over a 16-year period. The infants of women who had eaten contaminated fish had a lower birth weight and smaller head circumference than the infants of the control group. When given a standard test for infant development, these same infants showed more jerky and unbalanced movements, sluggishness in response, and weaker reflexes than the infants of women who had eaten no contaminated fish. The investigators say that these subtle characteristics often go unnoticed in infants, and that any developmental problems that emerge later are unlikely to be traced back to the mother's exposure to a toxic substance.

The FDA, the EPA, state agencies, and the Ontario Ministry of Environment have tried to provide the public with information on PCBs and other toxics in the Great Lakes. Every Great Lakes state and the province of Ontario now issue warnings that explain the basic problem and offer guidelines about which fish are safe to eat and the safest way to prepare them. Ontario's guidelines come in a 197-page booklet complete with charts and tables for every major body of water in the province, while some states fit their advisories onto one page of generalized advice. Most states now issue warnings advising women who are pregnant, lactating, or of childbearing age not to eat any of certain fish from the Great Lakes—a tragic statement about what has happened to what



"THAT'S *ODD*... IT'S ALREADY COOKED...!"

was once one of the world's great fisheries.

These health warnings, issued independently by each state, are typically based on limits established by the FDA. But the agency is reluctant to issue "acceptable" levels for chemicals that lack sufficient research data, and it may say nothing at all rather than speculate that a chemical could be a health hazard. The FDA currently regulates the interstate sale of Great Lakes fish containing PCBs, DDT, aldrin/dieldrin, mirex, chlordane, heptachlor, and toxaphene, leaving a long list of chemicals in the realm of the unknown. In the spring of 1983 great alarm arose over the possibility that gefilte fish made from carp caught in Lake Huron's Saginaw Bay might contain dioxin. State agencies began wide testing, but even when dioxin was found in some areas, the question of whether the fish were safe to eat remained unanswered. Because no standards had been set, no one really knew.

© Joseph Sterling/Click/Chicago

Legislation has controlled much of the visible pollution in the Great Lakes—the kind that killed these fish—but the ecosystem is still threatened by a cornucopia of invisible toxins.

ONE REASON for the scarcity of data on toxics is the cost of collecting it. A basic mass-spectrograph test for the presence of one chemical in one fish costs between $100 and $3,000. Testing numerous fish for a wide range of chemicals quickly escalates these costs. Consequently, state and federal agencies tend to test only for those contaminants they suspect might be present in a specific area. Different agencies look for different substances using different methods, and it is difficult to assess the overall picture. There is still no standardized method for testing contamination in fish across state or international boundaries, which leaves the public wondering whether the same fish that was banned in Michigan would be considered safe in Indiana.

Fortunately, some states are taking steps to study the extent of the toxic problem. Wisconsin, Illinois, Indiana, and Michigan have been meeting to set consistent standards for testing fish for contamination. Wisconsin has started a program to monitor wildlife for pesticide and chemical accumulation. In all, 130 animals are slated to be tested for PCBs, 17 for agricultural pesticides, and 7 for heavy metals—all at a cost of $30,000.

Identifying toxic substances and measuring their concentrations is one thing; determining their environmental impacts and their consequences for human health is yet another. Aside from the lack of information about the effects of individual substances on human health, there have been few or no studies of the synergistic effects of multiple contaminants found together. The problem is dramatically compounded by the fact that more than 800 toxic chemicals have been found in the Great Lakes, and regulatory standards have been set for only a handful of them. State and federal agencies have some idea of the magnitude of the PCB problem, but much less is known about other chemicals. Mirex, toxaphene, aldrin, dieldrin, chlordane, and other pesticides continue to appear in certain fish samples, along with furans (dioxinlike compounds), heavy metals, and polynucleararomatic hydrocarbons (PAHs).

The PAHs, such as benzo-a-pyrene, appear to be among the most hazardous of these chemicals, as they may be one link to the increasing incidence of cancer found in fish, often discovered in the form of lesions in liver tissue, or grotesque skin tumors. Unlike the bioaccumulative substances, PAHs are metabolized, and the metabolic process itself produces part of the toxic effect. Thus, short-term exposure rather than long-term accumulation becomes a primary concern with these substances. Studies of bottom-dwelling fish in the heavily industrialized Buffalo and Black rivers (Lake Erie tributaries) indicate that repeated exposure to contaminated sediments are likely to produce cancer. Neoplasms (tumors) have been found in fish throughout the Great Lakes, even outside of industrial areas.

PCBs, fish tumors, and new warnings on eating yet another species of fish have bewildered a public that presumed the lakes' pollution problems were easing. The current generation of environmental laws were designed to regulate different sources of pollution: air, water, solid waste, manufacturing processes. The Great Lakes toxics are not easily isolated into specific categories, and tend to elude our relatively unsophisticated attempts at control.

Toxaphene is a good example of a toxic substance that current law has been unable to address adequately. While many of the pesticides found in the Great Lakes are residues from crop applications in the region, toxaphene has not been used there since the 1950s except in isolated cases. Yet in recent years measurable amounts of the pesticide have showed up in fish throughout the Great Lakes. The probable source is airborne deposition. Used as a pesticide in western cattle yards and against boll weevils on cotton fields, enough toxaphene must have found its way into the atmosphere to be deposited in the Great Lakes, where it has accumulated in levels significant enough to cause concern. Toxaphene use was restricted by the EPA in 1981, but the problem it exemplified—long-range atmospheric transport of toxic substances—is still largely unaddressed by current law.

Airborne deposition is by and large the major source of new toxic pollution in Lakes Superior, Michigan, and Huron. Measurable amounts of PCBs have been found in inland lakes on Isle Royale National Park, isolated in the far reaches of Lake Superior. The only possible source is the atmosphere. Likewise, lead, sulfuric and nitric acid (acid rain), evaporated and aerated substances from sewage treatment plants and landfills, and "fugitive" emissions from industrial plants find their way into the atmosphere and eventually into the lakes. Contaminated lake sediments themselves may be a source of airborne toxics during dredging operations. The EPA regulates only a handful of toxic air pollutants: sulfur dioxide and lead through ambient standards, and asbestos, beryllium, mercury, and vinyl chloride through special emission standards. Other airborne toxics, however, remain largely uncontrolled.

In Lake Erie, the Niagara River, Lake Ontario, and the St. Lawrence River, the major sources of toxic pollution are still industrial effluent and emissions, and runoff from cities and farms. Leachate from hazardous waste sites may also be a source. A study released by Environment Canada, the EPA, and New York's Department of Environmental Conservation reported in November 1984 that some 3,000 pounds of chemicals were entering a 37-mile stretch of the Niagara River each day. The list included PCBs, mirex, endrin, cyanides, chlorinated benzenes, mercury, and lead and other heavy metals. Much of the problem results from lax enforcement of the standards that are in place; part of the problem is simply a failure to set adequate standards under the existing Clean Water Act. Some seven years after reauthorization of the act, only two categories of industries—electroplaters and paints and solvents—are required to meet pretreatment standards for toxic wastes discharged into municipal treatment systems.

To address the problem of toxic substances in the Great Lakes more adequately, the next generation of legislation must address the fact that toxic materials are rarely "static" in the environment. An air pollutant today, a water pollutant tomorrow, and eventually a contaminated fish, toxics often remain invisible in the ecosystem.

To compound matters, seven states, two provinces, numerous tribal councils, and two nations share an interest in managing the Great Lakes/St. Lawrence system, with no one agency holding final authority. Not surprisingly, the situation fosters numerous jurisdictional problems.

So while some may brag that the Great Lakes are fishable and swimmable again, further measures need to be taken to protect the world's largest freshwater system from further deterioration. New approaches to Great Lakes management are long overdue. While more study is needed, study cannot replace overhauling piecemeal state and provincial enforcement and plugging holes in federal laws. If the United States is willing to tackle Great Lakes pollution more aggressively, there is hope for building a strong partnership with Canada when the International Water Quality Agreement is renewed in the next year, and for working together to preserve a regional, international, and global resource that can not only produce life, but sustain it. ☐

JANE ELDER *is the Sierra Club's Midwest Regional Representative.* MARGE REWALD WETZEL *is an intern in that office.*

SIERRA
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Responses to Questions from Senator Durenberger

1. What impediments do we face in reaching the Clean Water Act's goals of fishable, swimmable water for the Great Lakes?

A. Many conventional pollutant sources are not yet adequately treated, non-point sources are largely unregulated, and toxic pollutants are inadequately regulated.

2. How has the U.S.improved their performance since the 1982 GAO report?

A. The U.S. continues to make progress in cleanup of conventional pollutants within the constraints of existing budgets.

3. What remains to be done?

A. Sewage Treatment--While secondary sewage treatment plants are in operation throughout the basin, the construction agenda is not yet complete. Many communities in the basin are still in need of new facilities. In addition to new construction, adequate operation and maintainence of exisiting facilities is a concern, with many facilities falling short of compliance on one or more standards. The industrial pre-treatment program must also be enforced in a timely fashion, as many toxic materials enter water systems through inadequately treated sewage plant effluent.

B. Non-point sources must be controlled through more than voluntary programs. Up to half of the conventional pollutants in the lakes are from non-point sources. This is a particular problem in the area of nutrient loadings from agricultural run-off.

C. New programs to control and clean-up toxic subtances must be initiated. Contaminated sediments are largely uncontrolled and uncontained. They will continue to pose threats to the viabiliy of the Great Lakes ecosystem unless remedial measures are undertaken. New regulatory programs must be developed to control sources of toxic contamination not currently regulated by federal law. The most significant of these unregulated sources is long range dispersal and deposition of airborne toxics.

D. Great Lakes states should develop the same water quality standards and goals for the Great Lakes under state water quality programs.

E. Any new Water Quality Agreement with Canada should stress cleanup goals and mutually agreed upon deadlines for both remaining conventional pollution and toxic substances.

F. The United States should codify the Water Quality Agreement with Canada so that its provisions are enforceable in U.S. Courts.

G. Great Lakes research facilities must continue to receive federal support to sustain critical research efforts into the effects of pollutants on the Great Lakes ecosystem.

4. WHAT ARE THE COSTS?

This is a very difficult question to answer. The job of cleaning up toxic hot spots in the basin will be an awesome undertaking. The Waukegon Harbor cleanup is already estimated at 22 million dollars, and this does not take into consideration final containment and storage of the contaminated material. There are approximately 343 toxic hot spots in the Great Lakes which will need some sort of eventual cleanup as well. Restoration of the Great Lakes is likely to cost several billion dollars over the next ten years. The investment, however, will be well worth it.

5. Who has the responsibility to meet these goals?

The responsibility for meeting the goals of fishable and swimmable water for the Great Lakes ultimately rests with the federal governments of the United States and Canada. States, provinces, tribal and local governments all share in the responsibility of caring for the Lakes, but the authority for overseeing the stewardship of this global resource is at the federal level. Specific authority for administering the U.S. programs needs to be more clearly defined within the numerous federal agencies that have management authority in the Great Lakes. One agency needs to have final administrative authority over federal programs affecting the Great Lakes.

TESTIMONY BEFORE SUBCOMMITTEE ON INTERGOVERNMENTAL RELATIONS, MAY 22, 1985

SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS

My name is Donald McNaught. I am Professor of Ecology and Behavioral Biology and Director of the Minnesota Sea Grant Institute, part of the Graduate School of the University of Minnesota. For the past eight years I have been involved in studies clarifying the impact of toxic substances on Great Lakes food chains. For the past 22 years I have studied the Great Lakes, beginning with Lake Michigan and most recently Lakes Superior and Erie.

Senator Durenberger (Minnesota) has asked that I comment on S.765, and I am pleased to do so. I thank him for this opportunity, and for his wisdom in attaching S.765 to the Clean Water Act. Subsequently I will show that the objectives of S.765 are vital to the management and rehabilitation of the Great Lakes. Senator Durenburger's personal concern with nonpoint pollution is one of the key issues.

Great Lakes Ecosystems

Two centuries ago the Great Lakes were pristine ecosystems without problems of toxic contaminants or excess nutrients and algae. They had simple populations of fishes dominated by the lake trout. First man polluted the lakes with sewage. Much later toxic organics began to appear, first DDT, then PCBs. Today, at least 800 toxic compounds have been indentified in the Great Lakes.

My desire to testify on S.765 is based on two of the major objectives of the bill, in support of monitoring and research to:

1. reduce the input of excess nutrients from nonpoint sources, and
2. to learn how to remove in-place toxic contaminants from bottom sediments of Great Lakes ecosystems.

Both of theses goals will be expensive to attain. Thus, I direct my testimony to specific examples where cleanups have improved local economics.

Economic Implications of Cleaner Waters

Excess nutrients in the Great Lakes stimulate production of plants that may limit available oxygen. Toxic pollutants, as they cycle through Great Lakes food chains, inhibit photosynthesis by algae, feeding by plankton, and fish reproduction. The interactions between nutrients and contaminants in limiting fish production are not well studied.

Below I present three cases where environmental cleanups have created sportfisheries of considerable value. These data were collected by scientists in Sea Grant programs in the Great Lakes Network and include data collected by various state departments of natural resources. The three fisheries include the St. Louis Estuary walleye fishery in Minnesota/Wisconsin, the western Lake Erie walleye fishery in Ohio, and the Lake Ontario salmon fishery in New York. In each of these cases, cleanups occurred for various reasons and were documented in varying detail.

Before 1978, mill wastes entering the St. Louis Estuary via the St. Louis River bore heavy loads of pulp mill wastes, which led to high oxygen demand in the estuary. In 1978 a wastewater treatment plant was built. Before the cleanup, Minnesota Department of Natural Resources (DNR) records show that the dissolved oxygen in the estuary was zero parts per million (ppm); following the cleanup it was greater than 4 ppm. Before the cleanup, anglers made less than

1,000 trips per year to the estuary; following the cleanup, they made more than 30,000 per year. Before the cleanup, DNR ascertained that anglers harvested less than 1,000 walleyes per year; following the cleanup, they harvested more than 30,000 per year. This exciting sportfishery has provided an estimated $800,000 per year to the Duluth (Minnesota) economy, assuming anglers spent $26 per trip.

Until 1970, western Lake Erie had been going downhill. That year, the walleye fishery had to be closed because of mercury contamination. In 1975, water quality improved with the construction of a treatment plant in Detroit. It reduced nutrient (PO_4) inputs by 50 percent. In 1976, Ohio DNR estimated the walleye harvest at 111,000 fish. By 1980 the sport harvest had increased to 3 million fish. In 1975 the Ohio Sea Grant program counted 34 charter captains; in 1984, 650 captains. In 1981 Ohio Sea Grant estimated the fishery had an economic value of $100 million, which increased to $125 million by 1984. What an economic stimulus to Ohio! Ohio Sea Grant countinues to chart these successes.

Clearly these cleanups had different origins, even though both resulted in major economic benefits. Sometimes cleanup occurs naturally. As PCBs declined by 50% in Lake Ontario salmonids, the New York Department of Environmental Conservation lifted its consumption/possession moratorium (1978). During the consumption ban, Lake Ontario fishing declined by 70 percent. We can certainly say that the economic value of the fishery has increased with the natural biodegradation of these organics in the lake. The best indication of success is the size of the charter fleet. Since 1975, the number of charter operations has increased from 0 to 400.

Economic Support for Public Demonstrations and Research

S.765 calls for the creation of a Great Lakes Research Office (Section 5). Such an office will conduct (Section 5), through the Great Lakes Environmental Research Laboratory, the National Sea Grant College Program, and other federal laboratories, and the private sector, appropriate research and monitoring activities to address priority issues and current needs relating to the Great Lakes.

Please support our concern that Section 5 be amended to include research support to those segments of EPA, NOAA including Sea Grant, Great Lakes universities, and other appropriate agencies and private concerns experienced in solving Great Lakes problems.

It is not the purpose of this testimony to stress the relative value of particular institutions, public or private, but to emphasize that the talent exists to solve such problems in traditional institutions. Specifically, at the University of Minnesota, we have researchers developing bacterial strains potentially capable of degrading PCBs at ambient levels in the Great Lakes. These methods can solve problems of in-place toxic contaminants.

Support for S.765

I support the objectives of S.765. The ultimate revision and amendment of Section 5 is of vital concern to me, and to the potential success of the programs to conduct management, research, monitoring, and public education on the problems of the Great Lakes.

RESPONSE OF MR. McNAUGHT TO A WRITTEN QUESTION

If funding for the Great Lakes Environmental Laboratory and the Sea Grant Program were eliminated, who would pick up the slack?

Response:

Senator Durenberger, your question concerning funding for the Great Lakes Environmental Research Laboratory (GLERL) and the national Sea Grant Program has a simple answer--nobody would pick up the slack if the above progams were eliminated by the Congress. The states have never funded large scale applied (or even basic) research programs. Some would suggest that industry might pick up the tab, but previous experience suggests that industry will fund only limited projects of specific interest because of potential profit to the company.

In fighting to authorize and fund both GLERL and the six Great Lakes Sea Grant programs, two additional points are important:

1. Support for Great Lakes research falls into two categories, that through NOAA ($15.1 M in FY 1985) and that through EPA and Interior ($14.3 M in 1985). If GLERL and Sea Grant are terminated, we would lose (in 1985 dollars) $8.71 M or 30 percent of all Great Lakes funding (see attachment on IMPACT).

2. Level funding for Sea Grant and GLERL is not sufficient. Over the past five years (adjusting for constant 1980 dollars), Sea Grant programs have suffered a 33 percent decrease in purchasing power.

Since 1982, GLERL has had a reduction due to inflation of $700,000 in purchasing power, or 18 percent of their FY 1985 budget. Similarly, the Large Lakes Research Station of EPA has suffered a $600,000 reduction in purchasing power.

With regard to S.765, on which we testified, I am particularly concerned with the proposed flow of monies for Great Lakes research through EPA Region V to GLERL and Sea Grant. It would be preferable to have Sea Grant funds obligated directly to the national Sea Grant Program.

IMPACT OF FY1986 FEDERAL BUDGET ON GREAT LAKES RESEARCH AND MANAGEMENT

The proposed FY1986 federal budget again nearly eliminates federal funding for Great Lakes research and management programs. If approved, National Oceanic and Atmospheric Administration supported Great Lakes research will end. The primary federal research presence remaining in the Great Lakes will be a somewhat reduced Environmental Protection Agency research program and the Department of Interior's Fisheries Laboratory in Ann Arbor, MI.

	$ Millions	
Agency	Actual FY1985	Proposed FY1986
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION		
Coastal Management Programs: MI, NY (includes some Atlantic Coast activities), PA, WI	5.616	0
Sea Grant Programs: IL-IN, MI, MN, NY (Great Lakes portion), OH, WI	4.869	0
Great Lakes Environmental Research Lab Ann Arbor, MI	3.844	0
Anadromous Fish Program (Great Lakes portion)	.680	0
Saltonstall-Kennedy Act (Great Lakes portion, FY84)	.105	0
SUBTOTAL (NOAA):	15.114	0

	$ Millions	
Agency (Continued)	Actual FY1985	Proposed FY1986
ENVIRONMENTAL PROTECTION AGENCY		
Duluth Water Quality Lab Great Lakes Research	2.5	1.28
Great Lakes Program Office Chicago, IL		
Grants and Contracts	4.1	3.9
Internal Research	1.1	1.1
DEPARTMENT OF INTERIOR		
US Fish and Wildlife Service Lab Ann Arbor, MI	Level funded 5 yrs	
Cooperative Fishery Research Units: OH, NY, WI	Continuing	
DEPARTMENT OF STATE		
Great Lakes Fishery Commission (Primarily lamprey control program)	6.593	7.477
TOTAL: (Incomplete for some agencies)	29.407	13.757

Beyond the proposed FY1986 budget cuts, the following terminations and reductions have already occurred for Great Lakes research and management programs.

- The Great Lakes Basin Commission, which conducted planning and management activities, was terminated in FY1982. This represents a loss of nearly $1.5 million a year.
- The U.S. Dept. of Energy's Argonne National Laboratory's Great Lakes Program (funded by EPA) was terminated in FY1982. This represents a loss of nearly $1 million a year.
- NOAA Research Vessel WHITING support for New York and Wisconsin Sea Grant Great Lakes fisheries research (20 days ship time committed for 1985) was abruptly withdrawn in December 1984. Similar NOAA ship support requested for Great Lakes research in 1986 was also cancelled. Withdrawal of the 1985 NOAA ship support represents a loss of $140,000.
- The National Sea Grant College Program is subject to rescission of $19.5 million from the FY1985 appropriation previously approved.* This has disrupted some programs already and threatens the Michigan and Illinois-Indiana Programs.
- The Coastal Management Program is also subject to rescission of $36 million from the FY1985 appropriation previously approved.* If approved, the rescission would terminate the program.

* The rescinded funds will be released to the program after 45 session days (about the end of March 1985) provided that Congress does not approve the action.

Compiled by the Great Lakes Sea Grant Network. For more information, contact:

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March 1985

STATEMENT BY

ROBERT A. RAGOTZKIE

PROFESSOR OF METEOROLOGY AND ENVIRONMENTAL STUDIES

DIRECTOR OF THE UNIVERSITY OF WISCONSIN SEA GRANT INSTITUTE

ON

U.S. SENATE BILL 765

THE "GREAT LAKES MANAGEMENT ACT OF 1985"

BEFORE

THE SENATE SUBCOMMITTEE ON INTERGOVERNMENTAL RELATIONS

MAY 22, 1985

WASHINGTON, D.C.

My name is Robert A. Ragotzkie, and I am the director of the University of Wisconsin Sea Grant Institute. I am pleased to have the opportunity to comment on S. 765, the "Great Lakes Management Act of 1985," introduced by Senator Robert Kasten.

The Great Lakes are truly a priceless national resource. They contain 95 percent of the surface fresh water in the United States and hold a fifth of all the fresh water on the surface of the Earth. The lakes offer a practically inexhaustible supply of high quality water for residential and industrial use. They provide an inexpensive means of transporting raw materials, manufactured goods and agricultural commodities both within the region and overseas. The Great Lakes fisheries also represent a major food and recreational resource.

More than 60 million U.S. and Canadian citizens live and recreate in the Great Lakes basin. The attraction of living along the 4,503 miles of Great Lakes shoreline have caused coastal land values to quadruple. Shoreline property now costs several hundred dollars per foot of frontage, and its value continues to rise. The U.S. alone draws 41 billion gallons of water a day from the Great Lakes for municipal and industrial purposes. About half of that is used for electrical power production; the rest is used for drinking water, manufacturing and other industrial uses. Some 25 million people in the U.S. depend directly on the Great Lakes for drinking water.

With the opening of the St. Lawrence Seaway in the 1950s, the Great Lakes became an international trade route. More than 220 million tons of commodities were shipped on the Great Lakes in 1980. More cargo tonnage is moved through the locks at Sault Ste. Marie than through any other lock system in the world.

The Great Lakes sport fishery today attracts about five million anglers, with a regional economic benefit of about $1.1 billion annually. The Great Lakes also support some 600 commercial fishermen, whose catch has a dockside value of about $48 million a year and a regional economic impact more than four times that. The rebirth of the fishery has been responsible for the economic resurgence of scores of Great Lakes coastal communities.

However, the history of the Great Lakes has been marked repeatedly with crises that resulted largely from a lack of coordinated management and insufficient knowledge about how the ecosystem functions. For instance, the once-abundant fisheries of the Great Lakes were nearly destroyed in the first half of this century due to overexploitation, pollution and the accidental and deliberate introduction of exotic species of fish.

The sea lamprey, a parasitic ocean fish that entered the Great Lakes through the shipping canals built around Niagara Falls, by the 1950s had wiped out the native lake trout in every lake but Superior, and decimated several other large species of native fish as well. To coordinate efforts at solving this international problem, the U.S. and Canada formed the Great Lakes Sea Lamprey Committee in 1946 and about a decade later created the Great Lakes Fishery Commission. After eight years of research and testing, a chemical lampricide was found, and the lampreys were largely under control on the three largest lakes by the late 1960s. But this solution is not final. Continuous control of the sea lamprey costs several millions of dollars a year, but without it today's billion-dollar Great Lakes sport fishery would be severely impacted and some commercial species would be wiped out.

The elimination of the predatory lake trout caused another ocean invader, the alewife, to explode in number, resulting in a massive die-off in 1967 that left windrows of dead alewives a foot deep along most of the Lake Michigan shoreline. With the lamprey under control, Wisconsin, Michigan and the U.S. Fish & Wildlife Service cooperated to restock the lake with lake trout, but to this day these planted trout have failed to reestablish a reproducing population for yet-unknown reasons. In the late 1960s, first Michigan and then Wisconsin introduced salmon, the alewife's natural predator, in an attempt to control the alewives. The experiment was a success. Not only did the salmon control the alewife population, but a world class salmon fishery was created.

Today's immensely valuable Great Lakes salmonid sport fishery is maintained almost entirely by stocking by state and provincial agencies, but ultimately it is dependent on an adequate supply of forage fish like alewives, smelt and sculpin. If the populations of these forage fish were to drop, due either to natural fluctuations or to the overstocking of salmon and trout, these predators would likely switch to perch and chubs, both of which are valuable commercial species. Thus, it is essential that the stocking rates be kept in balance with the forage fish populations. The Great Lakes Sea Grant universities are currently conducting a systemwide Salmonid Diet Survey to determine the diet habits of Great Lakes salmon and trout by examining stomach contents of fish caught at salmon derbies throughout the region. Through a regular data exchange and annual meetings, scientists from each of the Great Lakes states and Canada hope to quickly detect any significant changes in the eating habits of the salmon and trout and thereby determine if any of the Great Lakes is in danger of being overstocked.

In addition, university scientists have developed sophisticated mathematical models of predator-prey relationships that enable them to predict what levels of salmon and trout populations can be supported by the existing stocks of forage fish. Individually, agencies of several Great Lakes states are now using the results of these salmonid diet studies and predator-prey models to develop their salmon and trout stocking policies.

Ideally, all eight Great Lakes states and the province of Ontario should coordinate their stocking policies if the the Great Lakes fisheries are to be more effectively managed. Such an ideal situation would have a better chance of occurring if Great Lakes fishery research and monitoring activities were well coordinated and the results exchanged quickly. The start we have made with the Salmonid Diet Survey clearly shows the advantages of coordinated systemwide studies.

Up through the 1960s, the water quality of the Great Lakes had been deteriorating at an increasing rate. A massive cleanup effort in the 1970s turned the situation around, and now we see significant improvement in Lake Erie and a steady-state or slight improvement in the other Great Lakes. But now the Great Lakes are imperiled by an emerging, insidious threat: toxic contaminanation of the lakes' water, sediments and fish by a variety of toxic chemicals -- first DDT, then PCBs; now it's others like chlordane, toxaphene, dieldrin and dioxins.

Contamination of the fish has caused restrictions on the commercial fisheries and large, continuing economic losses for the region's fishermen and related industries. It has also cast a cloud over the sport fishery -- the economic lifeblood of many coastal communities. It even poses a major problem for the shipping industry, as the dredging of harbors and channels is inhibited by environmental concerns about resuspending contaminants already buried in the bottom sediments and the disposal of contaminated dredge spoils.

We have already learned a great deal about the contaminants problem. The sources, fates and effects of a number of Great Lakes contaminants have been studied and are beginning to be understood. We know, for example, that many of the chlorinated hydrocarbons like DDT, PCBs and dioxin become highly concentrated in the aquatic food chain and that the primary pathway to humans is through the consumption of Great lakes fish.

Concern over this problem has resulted in numerous public advisories regarding which Great Lakes fish are safe to eat and which are not. The federal government sets contaminant standards for commercial fish shipped across state lines. Keying on these standards, the states in turn issue advisories on these contaminants in sport fish. The same process goes on in Canada.

These advisories are based on tests on samples of each fish species from each lake. But because of differences in sampling and testing protocol and also in interpretation of the results by various federal, state and university laboratories, the content of these advisories have been the subject of considerable controversy. We need to greatly improve the sampling and testing of Great Lakes fish and other biota as well if we are to determine the actual levels of contaminants in the Great Lakes, the human health risks of eating the fish, and the year-to-year trends in the concentrations of key toxic contaminants. Clearly, systemwide coordination of these activities must be improved and data exchange opened up if we are to deal with this problem effectively.

Let me cite an example of what happens when coordination does not occur. In the southern end of the Bay of Green Bay there is a Forster's Tern rookery. From routine observations over a number of years, it became apparent that something was wrong with the colony. Reproduction rates were down, and some of the chicks that were born were malformed. Dioxin, a toxic contaminant, was suspected as the cause. To investigate the problem, the Wisconsin Sea Grant College Program set up a joint research project including the U.S. Fish & Wildlife Service, the Wisconsin Department of Natural Resources and university scientists. The project was completed and dioxin was indeed implicated.

Simultaneously, the possibility that parts of Green Bay were contaminated with dioxin became generally known among various government management agencies. Within a few months in 1984, 16 separate research groups from 10 state and federal agencies and from Canada were conducting dioxin-related studies on the bay. Each proceeded independently, and little or no attempt was made to work together. In fact, there was obvious resistance to interagency or even intra-agency communication and cooperation.

Not only does such apparent duplication and isolation of effort waste money and time, but it is also poor science and does not lead to constructive management policies. I am sure each agency and each laboratory group was sincere in trying to investigate a potentially serious problem. Yet the movement of dioxin through the water, sediments and biota of the system was a common set of circumstances that led to various effects on the top predators, namely birds and fish, with a potential of a human health hazard. Almost certainly there were common goals. Here was a case where good coordination could have resulted in better science, probably more definitive answers, and certainly less expenditure of time and money.

Solutions to the problems that confront the Great Lakes require continued research and better research coordination than we have achieved up to now. The establishment of a Great Lakes Research Office within NOAA, as called for in Section 5 of S. 765, could help meet this need. By coordinating federal programs and by working with the university Sea Grant Programs, this office could accomplish a great deal in strengthening and focusing Great Lakes research.

The setting of Great Lakes research priorities, for example, could and should include regular and in-depth input from the Great Lakes Sea Grant College Programs. An inventory of Great Lakes research projects is an obvious first step in any research coordination effort. There would be no difficulty whatsoever in including in this inventory the entire Great Lakes Sea Grant research program, which currently makes up about a third of all Great Lakes research.

The Great Lakes Research Office must be an independent and separate unit from any of the existing research centers. To maintain its objectivity and credibility, it should not conduct research itself: that function should be left to the existing federal laboratories and university programs.

The need and desire for research coordination is a familiar cry in the world of research funding and management. In and of itself, coordination can easily become simply another layer of bureaucracy that impedes and inhibits research. However, in a system like the Great Lakes -- which spans 1,200 miles and eight states and two provinces of two nations and includes a variety of conflicting uses and valuable resources -- it is an inescapable conclusion that some degree of research coordination is essential. Such coordination does not imply the directing or top-down control of research, but it does imply -- indeed, it requires -- open and timely communication, the sharing of data, and free and open discussion of research plans and objectives.

Coordinated research alone will not solve the Great Lakes' problems. The translation of research results to management policy is another and quite different process that has received all too little attention. The communication of research results in a useful and understandable form to the public is also an essential part of managing the Great Lakes.

The unversity Sea Grant Programs have the mandate and the capability to carry out these functions. They are already fairly well organized into a Great Lakes network, but they would welcome a stronger partnership with a well-coordinated federal research program.

In summary, I am pleased to support S. 765 and, in particular, I welcome the strengthening of Great Lakes research through the establishment of a Great Lakes Research Office.

Thank you for the privilege of speaking before you.

Additional Question

If funding for the Great Lakes Environmental Laboratory and the Sea Grant Program were eliminated, who would pick up the slack?

Reply by Robert A. Ragotzkie:

If federal funding for the National Sea Grant College Program were eliminated, the six Great Lakes Sea Grant programs would probably last no more than one year. Support for Sea Grant programs consists of no more than two-thirds from the federal government and at least one-third from state, university and industry sources. Thus Sea Grant is a partnership program of the federal government, states and universities, and industry. Great Lakes Sea Grant programs are presently receiving about $4.9 million federal support for Great Lakes research. These programs receive well over the required one-third match from state, university and industry sources.

Without federal support it is highly unlikely that the non-federal support for Sea Grant would hold up for more than a year or so since the state and industry partners would view the withdrawal of the federal government as essentially the dissolution of the partnership. The likelihood of the states and industry picking up the federal share is nil. Other sources of funding for university research such as the Environmental Protection Agency and the U.S. Army Corps of Engineers are not growing and from all reports are likely to decrease. The National Science Foundation has no Great Lakes program per se and Great Lakes research proposals do not compete well in NSF's Oceanography Program which favors saltwater research. The Department of Defense, particularly the Office of Naval Research, which has a major oceanography research program, has no mission in the Great Lakes and hence will not support research there.

In addition, there are several university research vessels which are heavily supported by Sea Grant research programs. If Sea Grant were to terminate most of these vessels would have to be laid up. NSF and ONR both support ocean research vessels but not Great Lakes vessels.

The net effect would be the reduction of university Great Lakes research to perhaps 10 or 20 percent of the present level. Continuity of programs on toxic contaminants and fisheries would be lost. Outreach activities, public education, and assistance to Great Lakes businesses and industry would cease completely. Most of the research vessels would be laid up.

If NOAA's Great Lakes Environmental Research Laboratory were terminated, it is almost certain that their research program would not be taken over by any other agency. One need only look at the termination in 1981 of the Great Lakes Program of the Argonne National Laboratory which had been supported by EPA at an annual rate of about $1 million. Argonne's excellent program on radionuclides and mass balance of heavy metals in the Great Lakes has not been picked up by any agency.

Senator **DURENBERGER**. The subcommittee is adjourned.

[Whereupon, at 4:01 p.m., the subcommittee was adjourned, to reconvene subject to the call of the Chair.]

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

99TH CONGRESS
1ST SESSION

S. 765

To provide for coordinated management and rehabilitation of the Great Lakes and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 28 (legislative day, FEBRUARY 18), 1985

Mr. KASTEN (for himself, Mr. GLENN, Mr. PROXMIRE, Mr. BOSCHWITZ, Mr. LEVIN, Mr. HEINZ, Mr. RIEGLE, Mr. MOYNIHAN, Mr. QUAYLE, and Mr. D'AMATO) introduced the following bill; which was read twice and referred to the Committee on Governmental Affairs

A BILL

To provide for coordinated management and rehabilitation of the Great Lakes and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Great Lakes Management Act of 1985".

FINDINGS AND PURPOSE

SEC. 2. (a) The Congress finds that—

(1) the Great Lakes are a valuable national resource, continuously serving the people of the United

States and other nations as an important source of food, fresh water, recreation, beauty, and enjoyment;

(2) the Great Lakes, containing 95 per centum of the surface fresh water of the United States and 20 per centum of the world's fresh water, are among the greatest natural resources of the world;

(3) the Great Lakes are among the world's major waterways, each year carrying tons of waterborne shipping to and from all parts of the world;

(4) the ecosystems of the Great Lakes which provide sustenance and recreation to the people of the United States and other nations have been severely affected, and are continually threatened, by the introduction of foreign species into the lakes and by pollution of the Great Lakes waters;

(5) careful management of the Great Lakes will permit the rehabilitation and protection of the lakes, their waters, and their ecosystems, while continuing and expanding their use for industry, food production, transportation, and recreation;

(6) management of the Great Lakes is currently divided among many Federal, State, tribal, international, and local organizations;

(7) effective management of the Great Lakes is best accomplished through a partnership of the States and the Federal Government;

(8) agencies with management and research responsibilities for the Great Lakes should coordinate activities among themselves more effectively in order to obtain maximum benefits;

(9) a greater awareness of the importance of preserving and protecting the ecosystem and environmental quality of the Great Lakes is in the national interest; and

(10) Congress recognizes the Great Lakes Water Quality Agreement of 1972 as amended in 1978 and the need to comply with such agreement, with a particular need for meeting the goals pertaining to toxic pollutants.

(b) The purposes of this Act are—

(1) to provide for rational and effective coordination of the management of the Great Lakes and of the federally supported research aimed at protecting, rehabilitating, and enhancing the environmental quality and natural resources of the Great Lakes;

(2) to identify issues of concern which are affecting or will affect the Great Lakes and their ecosystem, and to develop and promote coordinated research, data

synthesis, and management plans which address these issues;

(3) to provide for the development of the necessary data bases of information to support the rational, efficient, and equitable utilization, development, protection, and rehabilitation of the Great Lakes and their resources;

(4) to provide to the Department of State problems and issues to be referred to the International Joint Commission for study and action;

(5) to foster public understanding and appreciation, and to assure greater understanding at all levels of government, of the role of the Great Lakes as unique natural resources;

(6) to reduce the input of nutrients into the waters of the Great Lakes;

(7) to demonstrate techniques for removing in place toxics from lake sediments; and

(8) to achieve the goals embodied in the Great Lakes Water Quality Agreement of 1978 through improved organization and definition of mission on the part of the Federal Government.

DEFINITIONS

SEC. 3. For purposes of this Act—

(1) the term "Great Lakes" means Lake Ontario, Lake Erie, Lake Huron (including Lake Saint Clair),

Lake Michigan, and Lake Superior, and the connecting channels (Saint Mary's River, Saint Clair River, Detroit River, Niagara River, and Saint Lawrence River to the Canadian border);

(2) the term "Great Lakes system" means all the streams, rivers, lakes, and other bodies of water within the drainage basin of the Great Lakes; and

(3) the term "tribe" means any Indian tribe recognized by the United States or a consortium of such tribes.

GREAT LAKES MANAGEMENT

SEC. 4. (a)(1) The Great Lakes National Program Office (previously established by the Administrator of the Environmental Protection Agency) is hereby permanently established within the Environmental Protection Agency in accordance with the provisions of this section.

(2) The Great Lakes National Program Office shall be headed by a Director who by reasons of his management experience and technical expertise relating to the Great Lakes is highly qualified to direct the development of programs and plans on a variety of major Great Lakes issues.

(3) The Director of the Great Lakes National Program Office may appoint such staff as the Director, with the concurrence of the Administrator of the Environmental Protection Agency, determines are necessary to carry out the duties and responsibilities of such Office and to fulfill the purposes of

this Act. The staff appointed pursuant to this paragraph shall be appointed subject to the provisions of title 5, United States Code, governing appointments in the competitive service and shall be paid in accordance with the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates.

(b) The responsibilities of the Great Lakes National Program Office are as follows:

(1) The Office shall develop, in cooperation with the appropriate Federal, State, tribal, and international agencies, the long-term, comprehensive environmental, resource, and economic data bases required for sound assessment of the impacts of proposed decisions of such agencies on the environmental health, productivity, and economic well-being of the Great Lakes. These shall include, but not be limited to, developing, and reporting to Congress, specific action plans to carry out the responsibilities of the United States under the Great Lakes Water Quality Agreement of 1978.

(2) The Office shall inventory all Federal, State, tribal, and international agencies with management responsibilities for the Great Lakes system, identify jurisdiction overlap, and management plans and cooperative management activities in existence, and update the inventory biennial.

(3) The Office shall identify priority management needs to protect and rehabilitate the Great Lakes and their resources. In cooperation with appropriate Federal, State, tribal, and international agencies, the Office shall develop management plans where needed for the entire Great Lakes system, for specific lakes, or for specific issues.

(4) The Office shall develop, in consultation with the States, a five-year plan and program for reducing the input of nutrients into the Great Lakes. Such program shall include a soil conservation program for reducing nutrient runoff from nonpoint sources, and a program for monitoring nutrient runoff into, and ambient levels in, the Great Lakes.

(5) The Office shall carry out a five-year study and demonstration projects relating to the control and removal of toxic pollutants in the Great Lakes, with emphasis on the removal of toxic pollutants from bottom sediments.

(6) The Office shall identify lead agencies with primary responsibilities for each specific issue relating to the Great Lakes. Each agency identified as a lead agency shall submit a report on such issues to the Office by the end of each fiscal year. The report shall

identify any changes in the Great Lakes system with respect to such issue.

(7) The Office shall prepare an annual report on the state of the Great Lakes, which shall be submitted to Congress and the President prior to December 31 of each year, and shall be made available to appropriate Federal, State, and tribal agencies which manage, monitor, or conduct research on the Great Lakes. The report shall contain an executive summary and appropriate scientific and technical data. The report shall include (but not be limited to)—

(A) an annual report on the status of the Great Lakes ecosystem, including (but not limited to) water quality, fisheries, and other biota;

(B) an annual update to reflect changing priorities in Federal, State, tribal, and international management needs as well as the need for fundamental research;

(C) a plan for the establishment and maintenance of comprehensive, long-term environmental, resource, and economic data bases on the Great Lakes;

(D) identification of the priority management issues in the Great Lakes system, and, in cooperation with Federal, State, tribal, and international agencies, the development of management plans to address these issues; and

(E) identification of the priority needs for rehabilitation and restoration of the Great Lakes and their resources, and in cooperation with Federal, State, tribal, and international agencies, the development of rehabilitation and restoration plans which address these needs.

(8) The Office shall actively promote, at the Federal, State, tribal, and international levels, the adoption and execution of the management and rehabilitation plans.

(9) The Office shall serve as a source of issues which the Federal Government refers to the International Joint Commission for study.

(10) The Office shall host a meeting (not less often than annually) for officials of Federal, State, and tribal agencies involved with the Great Lakes.

(c) The Administrator of the Environmental Protection Agency shall, in the agency's annual budget submission to the Congress, include a funding request for the Great Lakes National Program Office as a separate budget line item.

(d) The Great Lakes National Program Office shall be located in a Great Lakes State.

GREAT LAKES RESEARCH

SEC. 5. (A)(1) There is established within the National Oceanic and Atmospheric Administration the Great Lakes Research Office.

(2) The Great Lakes Research Office shall be headed by a Director who by reason of his management experience and technical expertise relating to the Great Lakes is highly qualified to direct the development of comprehensive data collection program for the Great Lakes basin.

(3) The Director of the Great Lakes Research Office may appoint such staff as the Administrator of the National Oceanic and Atmospheric Administration, working with the Administrator of the United States Environmental Protection Agency, determines are necessary to carry out the duties and responsibilities of the Office and to fulfill the purposes of this Act. The staff appointed pursuant to this paragraph shall be appointed subject to the provisions of title 5, United States Code, governing appointments in the competitive service and shall be paid in accordance with the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates.

(b) The responsibilities of the Great Lakes Research Office are as follows:

(1) The Research Office shall identify Federal, State, and tribal research programs, and, to the extent

feasible, those of private organizations and other nations, relating to the Great Lakes system, and shall annually update that inventory.

(2) The Research Office shall establish a Great Lakes research exchange for the purpose of facilitating the rapid identification, acquisition, retrieval, dissemination, and use of information concerning research projects which are ongoing or completed, and which affect the Great Lakes system.

(3) The Research Office shall identify the priority research needs for the protection and rehabilitation of the Great Lakes.

(4) The Research Office shall conduct, through the Great Lakes Environmental Research Laboratory, the National Sea Grant College Program, other Federal laboratories, and the private sector, appropriate research and monitoring activities which address priority issues and current needs relating to the Great Lakes.

(5) The Research Office shall cooperate with the Environmental Protection Agency, in the operation of a Great Lakes systemwide surveillance and monitoring network and reporting system to monitor water quality of the Great Lakes, with specific emphasis on the monitoring of toxic pollutants. The Research Office shall utilize any relevant data available from Federal agen-

cies, State, local, or tribal agencies, and international agencies.

RESEARCH AND MANAGEMENT COORDINATION

SEC. 6. (a) Prior to October 1 of each year, the Great Lakes National Program Office shall inform the Great Lakes Research Office of the Great Lakes Program Office's research needs for the fiscal year which begins in the following calendar year.

(b) Prior to January 1 of each year the Great Lakes Research Office shall inform the Great Lakes National Program Office of its budgetary requirements for conducting the research required under subsection (a).

(c) The Great Lakes Research Office shall report its findings to the Great Lakes National Program Office prior to October 1 of each fiscal year.

FINANCIAL ASSISTANCE

SEC. 7. (a) The Administrator of the Environmental Protection Agency may provide financial assistance in the form of grants or contracts for research, monitoring, and planning projects and activities necessary to address the priorities and needs established under section 4(b)(3) which are not being adequately addressed by Federal, State, or tribal agencies. The Director of the Great Lakes National Program Office shall make recommendations to the Administrator of the Environmental Protection Agency with respect to the awarding of twenty-four grants and contracts under this section.

(b) Any person, including institutions of higher education and departments, agencies, and instrumentalities of the Federal Government, of any State or political subdivision thereof, or of any tribe, may apply for financial assistance under this section for the conduct of projects and activities described in subsection (a) of this section, and in addition, specific proposals may be invited. Each application for financial assistance shall be made in writing and in such form and manner, and containing such information, as the Administrator of the Environmental Protection Agency may require. The Administrator of the Environmental Protection Agency may enter into contracts under this section without regard to section 3709 of the Revised Statutes (41 U.S.C. 5).

(c) The projects and activities supported by grants or contracts made or entered into under this section shall, to the maximum extent practicable, be administered through existing Federal programs concerned with research, monitoring, and management.

(d) The Administrator of the Environmental Protection Agency shall act upon each application for a grant or contract under this section within six months after the date on which all required information is received by the Administrator from the applicant. Each grant made or contract entered into under this section shall be subject to such terms and conditions as the Administrator of the Environmental Protection Agency deems necessary in order to protect the interest of the United States. The total amount paid pursuant to any such grant or contract may, in the discretion of the Administrator of the Environmental Protection Agency, be up to 100 per centum of the total cost of the project or activity involved.

(e) Each recipient of financial assistance under this section shall keep such records as the Administrator of the Environmental Protection Agency shall prescribe, including records which fully disclose the amount and disposition by such recipient of the proceeds of such assistance, the total cost of the project or activity in connection with which such assistance was given or used, the amount of the portion of the cost of the project or activity which was supplied by other sources, and such other records as will facilitate an effective audit. Such records shall be maintained for three years after the completion of such projects or activity. The Administrator of the Environmental Protection Agency and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access for the purpose of audit and examination, to any books, documents, papers, and records of receipts which, in the opinion of the Administrator of the Environmental Protection Agency or of the

Comptroller General, may be related or pertinent of such financial assistance.

INTERAGENCY COOPERATION

SEC. 8. (a) The head of each department, agency, or other instrumentality of the Federal Government which is engaged in, is concerned with, or has authority over programs relating to research, monitoring, and planning to maintain, enhance, preserve, or rehabilitate the environmental quality and natural resources of the Great Lakes—

(1) shall cooperate with the Administrator of the Environmental Protection Agency and Administrator of the National Oceanic and Atmospheric Administration in carrying out the purposes of this Act;

(2) may upon written request from the Administrator of the Environmental Protection Agency or Administrator of the National Oceanic and Atmospheric Administration, make available to such Administrator such personnel (with their consent and without prejudice to their position and rating), services, or facilities as may be necessary to assist such Administrator in achieving the purposes of this title; and

(3) shall upon written request from the Administrator of the Environmental Protection Agency or the Administrator of the National Oceanic and Atmospheric Administration, furnish such data or other informa-

tion as such Administrator determines is necessary to fulfill the purposes of this Act.

(b) The Chief of Engineers of the Army, the Chief of the Soil Conservation Service, the Commandant of the Coast Guard, the Director of the Fish and Wildlife Service and the Administrator of the National Oceanic and Atmospheric Administration shall each submit an annual report to the Administrator of the Environmental Protection Agency with respect to the efforts by that agency or office to comply with the Water Quality Agreement of 1972 as amended in 1978 and with recommendations made by the Office.

RELATIONSHIP TO EXISTING FEDERAL AND STATE LAWS AND INTERNATIONAL TREATIES

SEC. 9. Nothing contained in this Act shall be construed to affect the jurisdiction, powers, or perogatives of any existing department, agency, or officer of the Federal Government, or of any State government, or of any tribe, nor any powers, jurisdiction, or prerogatives of international bodies created by treaty with authority relating to the Great Lakes.

AUTHORIZATION OF APPROPRIATIONS

SEC. 10. (a) There are authorized to be appropriated to the Environmental Protection Agency for the purposes of this Act not to exceed $12,600,000 for each of the fiscal years 1986, 1987, 1988, 1989, and 1990.

(b) Of such amounts, $2,300,000 in each fiscal year shall be used for the program of soil conservation as follows:

(A) $1,000,000 for the Lake Erie Basin.

(B) 700,000 for Saganaw Bay.

(C) 300,000 for Lake Ontario.

(D) 300,000 for Southern Lake Michigan.

(c) Of such amounts, $700,000 in each fiscal year shall be used for the program of nutrient monitoring.

(d) Of such amounts, $5,000,000 is authorized for demonstration projects of the feasibility of controlling and removing toxic pollutants.

(e) The Administrator of the Environmental Protection Agency shall transfer to the Administrator of the National Oceanic and Atmospheric Administration such amounts as are necessary to conduct research pursuant to section 5, as requested by the Administrator of the Environmental Protection Agency pursuant to section 6.

(f) Amounts authorized in this section shall be available without regard to fiscal year limitations.

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